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AGE, DISTRIBUTION AND CULTURAL AFFILIATION OF RACCOON NOTCHED POINT VARIETIES IN WESTERN PENNSYLVANIA AND WESTERN NEW YORK

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ABSTRACT

Raccoon Notched point types and associated tools of the Raccoon Notched Point Assemblage are fully described, illustrated, and subjected to analyses of age, geographic distribution, and lithic source material.

Large centrally located Middle Woodland Raccoon Notched point sites in western Pennsylvania and western New York are classified as Regional Centers and these centers and their ancillary sites, including burial mounds, are discussed and plotted on maps.

Regional differences are examined and descriptions of selected Middle Woodland point types from these areas are presented. Illustrations are provided for the Bennington Corner Notched, Garvers Ferry Corner Notched, Kiski Notched, and Murphys Stemmed points.

A new Middle Woodland phase is defined for the study area. The Allegheny River phase, and its associated Raccoon Notched Point Assemblage, are dated at A.D. 500 to A.D.950. Extensive appendices are included in support of the conclusions.

INTRODUCTION

In 1941 Edmund S. Carpenter, under sponsorship of the Pennsylvania Historical and Museum Commission, initiated a research project to explore burial mound locations in the upper Allegheny Valley. Carpenter excavated a number of mound structures and reported the results of both his work and prior mound investigations in western Pennsylvania. His original manuscript, "Ancient Mounds of Pennsylvania," is housed at the American Philosophical Society Library in Philadelphia and sections of the manuscript were published in *The Pennsylvania Archaeologist* (Carpenter, 1956).

Then, in 1950, The Carnegie Museum of Natural History (CMNH) initiated systematic archaeological surveys in the upper Ohio drainage and this research interest continues to the present. Initially the project was directed by James L. Swauger, and the first fieldwork was conducted by William J. Mayer-Oakes, who published the results in 1955 as *The Prehistory of the Upper Ohio Valley.* Ten years later, William A. Ritchie published *The Archaeology of New York State,* which included an important Middle Woodland chronology for his central and western New York subareas.

More than two decades have passed since Ritchie's memorable work, yet few new excavations have been reported and no major publications have addressed Middle Woodland manifestations in western New York and western Pennsylvania. To fill this gap, an intensive survey of the site-recording files housed at the Division of Anthropology at CMNH was launched, the Division's field associates and regional representatives were consulted, and Middle Woodland artifacts in private collections throughout the study area were documented. The primary goal of the research project was to add to the data base established by Carpenter, Mayer-Oakes, and Ritchie. This is accomplished herein by fully describing and dating Raccoon Notched projectile point types and associated tools and identifying a Raccoon Notched Point Assemblage. Five basic point types, four knife forms, four drills, as well as strike-a-lights and scrapers, are illustrated. Suggested dates for the assemblage are A.D. 500 to A.D. 950, and available illustrations of associated ceramics and ground stone tools are included.

When plotting the areal distribution of this newly defined assemblage, it became apparent that at least seven major occupational loci were associated with numerous smaller sites. It is hypothesized that these major occupation zones served as "Regional Centers" during the Middle Woodland period. The centers, their ancillary sites, and the locations of known burial mounds are described and illustrated.

The final sections of this report address regional differences. In all areas, triangular points are noted as associated with Raccoon Notched points. Regional studies align the Raccoon Notched materials from southwestern Pennsylvania with the previously hypothesized Watson tradition of West Virginia (Hemmings, 1984:47; Maslowski, 1985:30) and the recently typed Bennington Point (Fogelman, 1984; Boldurian, 1985:171, 172).

In west central Pennsylvania, Raccoon Notched points and possibly the recently typed Garvers Ferry Corner Notched, Kiski Notched, and Murphys Stemmed points (George, 1982:181–209) appear to be associated with the southern Ohio Intrusive Mound Culture (Morgan, 1952:83–98). Other shared traits include Mahoning Ware ceramics, keeled-base platform pipes, and pendants. Here a continuous Middle Woodland connection with Ohio is documented by the presence of high percentages of Upper Mercer and Vanport lithics.

Based on preliminary findings, the Allegheny River phase, a new Middle Woodland manifestation

associated with the utilization of Raccoon Notched tools, is proposed. This phase is evident in the upper Allegheny valley from Warren, Pennsylvania, upriver to Olean, New York, and northwest toward Lake Erie. It must be emphasized that some of the assignations to known traditions and to a newly assigned phase are tentative concepts and, in some cases, lack sufficient supporting data. Nonetheless, the data at hand can be used to construct a Middle Woodland chronology for the Upper Ohio Valley.

THE RACCOON NOTCHED POINT ASSEMBLAGE

Background

Although the Raccoon Notched point has appeared in the literature since 1955 and is referred to by professional and non-professional archaeologists as a specific type in western Pennsylvania, New York, and Ohio, it has never been fully described in its various forms (Cowin, 1980:21; Eisert, 1981:28, 29; George, 1975:26–28; George and Bassinger, 1975:14, 15; Johnson, et al., 1979:73; Lantz, 1975:11; Prufer, 1967*a*, 1967*b*:22, 285, 292, 300, 303, 305; Seeman, 1980:11). Metric measurements and size ranges have not been fully published; nor have all the major sites producing these points been reported.

Raccoon Notched points and associated tool forms were first recognized by Emil Alam and Vincent Mrozoski. Beginning in the late 1930s, Alam systematically conducted an archaeological survey along southwestern Pennsylvania's Raccoon Creek and acquired a large collection of points and other artifacts which he subsequently donated to the Division of Anthropology at CMNH. Alam collected a quantity of Raccoon Notched points from the Outdoor Theater site (36 BV 24) which he designated the type site (Alam, 1972:4). When Alam and Mrozoski brought the distinctive points to the attention of the Museum in 1952, William J. Mayer-Oakes, recognizing that this point was prevalent in the Upper Ohio Valley, established the typology by describing the side- and corner-notched points as well as some of the base and blade characteristics (Mayer-Oakes, 1955). Later Alam described the side-notched variety, a drill, and two preforms (Alam, 1972:4).

Ritchie refers to the Raccoon Notched points as being similar to points found with a Kipp Island phase child burial excavated at Port Maitland, Welland County, Ontario (Ritchie, 1965:231; Plate 81). He tentatively typed two thin, well-made, side-notched, New York points as Long Bay and Maitland points (Ritchie, 1965:203–213; 1971:125). These points, especially the Maitland, resemble the Raccoon Notched points so closely that Mayer-Oakes included the Maitland point as one of the side-notched varieties of the Raccoon Notched point type (Mayer-Oakes, 1955:86, Plate 34). However, Ritchie's types cannot be fully compared to the Raccoon point types described in this report because metric data are not available for either the Long Bay or the Maitland points (Ritchie, 1971:125).

In 1947 and 1951, Ritchie excavated thin, corner-notched points at the Jack's Reef site, Onondaga County, New York, and typed them as Jack's Reef Corner Notched points (Ritchie, 1971:26–27). He lists the length range of these points as generally between 4.5 to 5 cm in length (Ritchie, 1971:26). In contrast, the majority of the corner-notched varieties of the Raccoon Notched point are from 3 to 4.3 cm, averaging 3.3 cm.

Similar points have also been typed in other states, but some of these are considered to be later than the dated western Pennsylvania Raccoon Notched types. These include the Late Woodland "Corner Notched Woodland" point of Alabama and the Knight Island point reported from Tennessee (Cambron and Hulse, 1969:69, 71). Also similar is the Reed point from Oklahoma, considered to be related to both the Gibson aspect of Middle Woodland and the Fulton aspect of Late Woodland (Bell, 1958). The pentagonal corner-notched Intrusive Mound points of Ohio (Converse, 1973:63) are comparable to Type 4 in this report's typology. Waldorf and Waldorf (1987:195) describe the Intrusive Mound point as almost identical to the New York Jack's Reef point; however, lengths of the Intrusive Mound points range from 3.8 to 4.4 cm, longer than either the Jack's Reef or the Raccoon Notched forms.

When Mayer-Oakes established his basic typology in 1952, he noted the presence of Raccoon Notched points along the Mahoning and Beaver drainages in Lawrence County and at Raccoon Creek in Beaver County, Pennsylvania. Examination of the Alam collection confirmed the presence of these distinctive points in the upper French Creek drain-

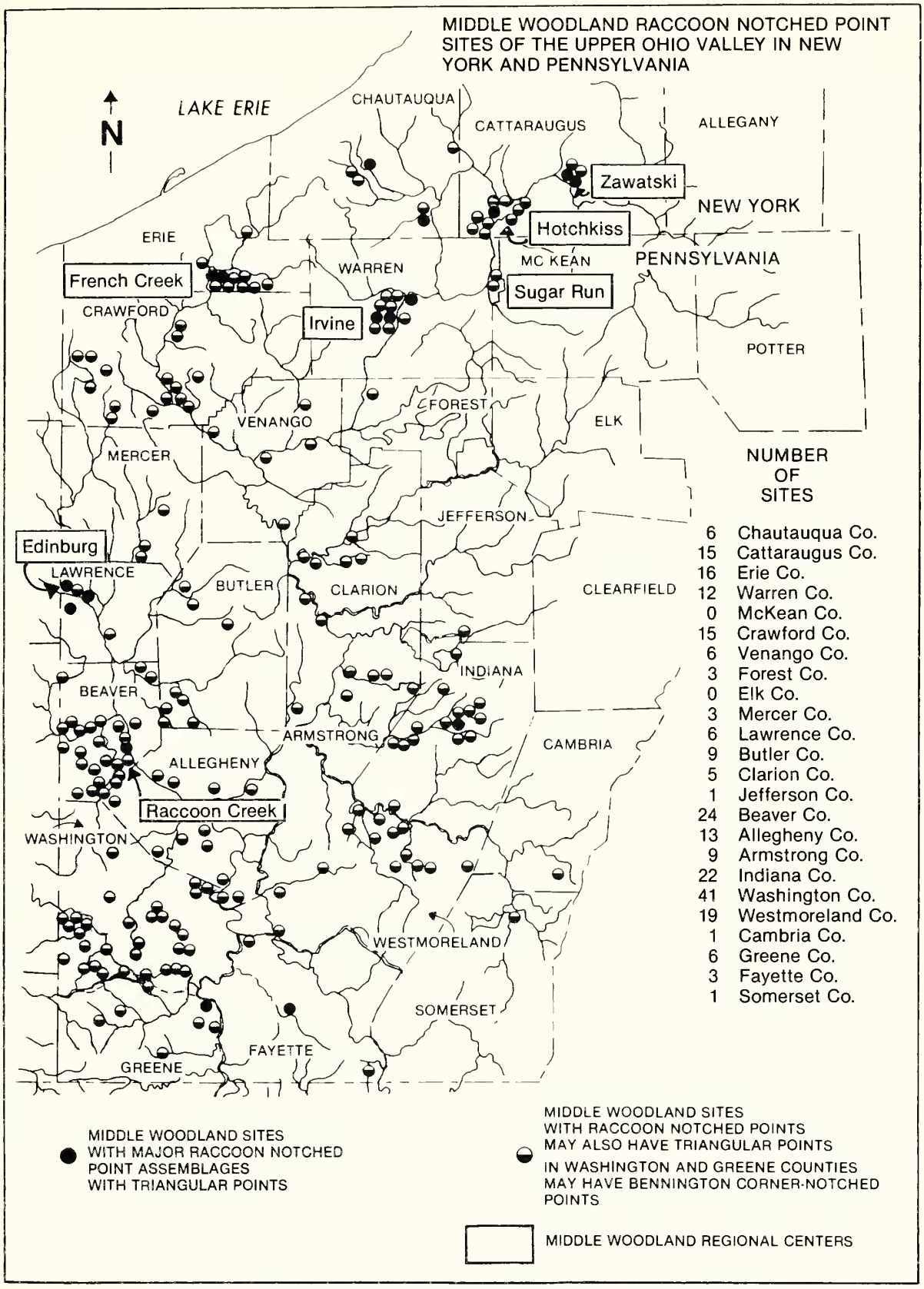

Fig. 1.—Middle Woodland Raccoon Notched point sites in New York and Pennsylvania.

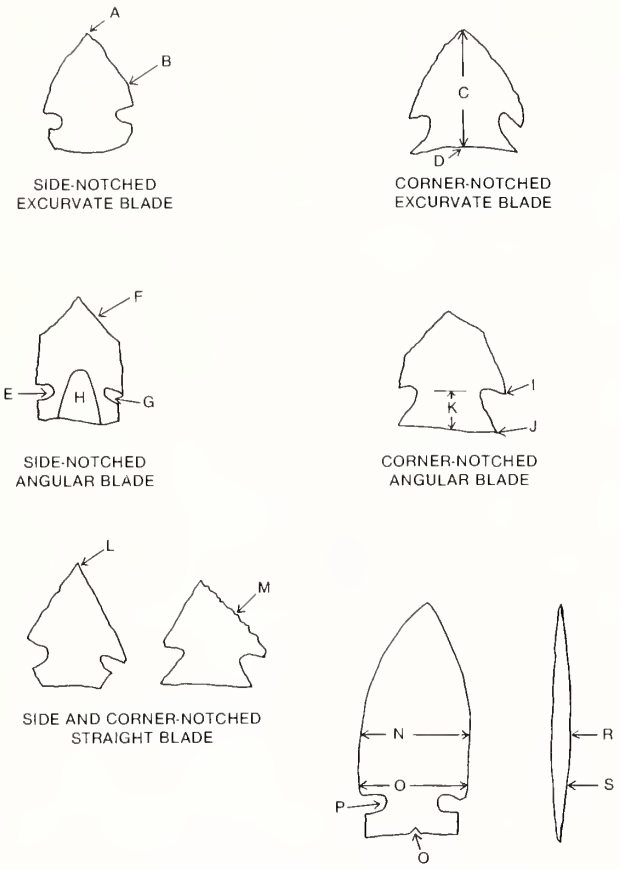

Fig. 2.—Standard projectile point terminology used in the text. A. Tip; B. Edge; C. Length; D. Base; E. Notch; F. Blade angle; G. Notch angle; H. Flute; I. Barb; J. Tang; K. Stem; L. Distal end; M. Serration; N. Blade width; O. Shoulder width; P. Notch depth; Q. Basal notch; R. Blade thickness; S. Stem thickness.

age in Erie County, Pennsylvania, as well. Subsequent survey work has now documented Raccoon Notched material along the upper Allegheny River in Warren County, Pennsylvania, as well as in New York's Chautauqua and Cattaraugus counties. While this indicates that the Raccoon Notched points are distributed throughout the Upper Ohio Valley, the tools are found in abundance at specific locations (Fig. 1). Concentrations of Raccoon Notched points were notable at the Beaver County Outdoor Theater site, 36 BV 24; three locations at Buckaloons in Warren County, 36 WA 29, 98 and 99; and at the Erie County Melnick site, 36 ER 31. The Middle Woodland lithics from these major sites provided a significant portion of the data base utilized to formulate the Raccoon point and tool typologies. This report, based on an interregional study initiated in 1980, fully defines and details the Raccoon Notched Point Assemblage and documents this important Middle Woodland manifestation in the Upper Ohio Valley.

Methodology

The Raccoon Notched Point Assemblage was defined through a laboratory study of provenienced specimens that were complete enough to be weighed and measured. The collections included in the analysis were either loaned or donated to the CMNH Division of Anthropology by the following field associates and regional representatives: Emil Alam, Beaver; Fran and William Ringlesbach, McDonald; William Stuart, Sugar Grove; and John Zavinsky, Warren, all from Pennsylvania, and William Buker, now of Tampa, Florida. Additional materials and information were obtained from Arnold Bailey, Meadville; William Bennington, Marianna; and M. Jude Kirkpatrick, Erie. The studied specimens represent over 250 accumulative years of collecting within the Upper Ohio Valley in Pennsylvania and a small quantity of Raccoon Notched artifacts retrieved by Buker from a comparable site in Muskingham County, Ohio (C-33 MU 34).

Over 5,500 sites recorded in the files of the Division of Anthropology at CMNH were reviewed for evidence of Middle Woodland occupation. These sites were identified by drawings, photographs, and listings of artifacts characterizing the period, namely, Snyders, Chesser, Steuben, Manker, Jack's Reef, and Raccoon Notched points. Documentation of chalcedony flake knives and ceramics was also culled from the files. Sites listed as being multicomponent were not included unless a direct informant interview confirmed a Middle Woodland occupation at any given locus. Rockshelters were eliminated entirely because of extreme variation in the information in the site files. For example, Warren County rockshelters were identified by time period but Venago County shelters were defined merely by name and location. Special consideration was also given to recently typed Middle Woodland points, including George's (1982) Garvers Ferry, Kiski Notched, and Murphys Stemmed and the Bennington Corner Notched (Quail Tail) point defined by Herbstritt (personal communication, 1986), and Boldurian (1985:171–172). All these latter types are too recent to appear in the CMNH site files. In these cases, all illustrations of points on site records were studied and the distributions of the newly defined point types were plotted. William Bennington confirmed site locations for the type that bears his name.

Known burial mounds within the Upper Ohio Valley in New York and Pennsylvania were also plotted. While these cannot be assigned to any given Woodland time frame, the mound structures fall into the same geographic settings as the open sites that were utilized by Middle Woodland cultures.

In all, 502 sites were identified as having Middle Woodland affiliations. Particular attention was paid to those sites that produced triangular points in association with components of the Raccoon Notched Point Assemblage and 160 sites were positively identified as having this association. The total count for sites with elements of the Raccoon Notched Assemblage is 236 and 68% of these sites have Raccoon Notched points in association with triangular points.

Collectors throughout the study area were interviewed and their collections were photographed and measured. Appendix I lists the provenience and collector for all artifacts included in the analysis, along with measurements, weights, lithic identification, and lithic sources. Research directed toward the project includes eight years of fieldwork in the French Creek drainage and along

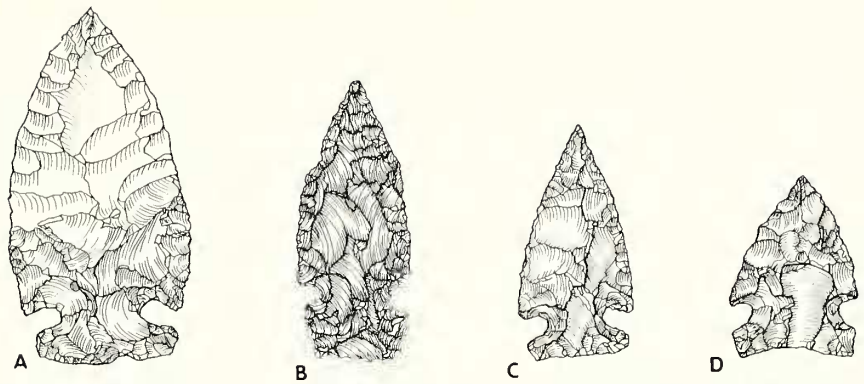

Fig. 3.—Type 1: Raccoon Side Notched points with excurvate blades. A. Onondaga, 36 WA 99; B. Coshocton, 36 VE 124; C. Flint Ridge, C-33 MU 34; D. Onondaga, 36 BV 24.

the Lake Erie Plain and 28 years of intensive site recording throughout western Pennsylvania and western New York.

To summarize, Middle Woodland archaeological sites are now identified by geographic location within counties and drainages of the Upper Ohio Valley. This confirms a considerable presence of Middle Woodland sites and burial mounds along major drainages in the western regions of Pennsylvania.

Since Mayer-Oakes (1955:97) recognized that Raccoon Notched projectile points occur with both side- and corner-notching, this basic structural difference was used to establish the initial categories in the assemblage. These two types were then separated according to variations in their configurations. Ultimately five types of projectile points were defined. These types are fully described and illustrated below along with four knife forms, four drill types, strike-a-lights, and scrapers, all considered to be part of the Raccoon Notched Point Assemblage. The terminology utilized in the descriptions of the types is shown in Fig. 2.

The Typology

Points

Type 1. Raccoon Side Notched Points with Excurvate Blades (Figs. 3, 4).

General description.—These are small, thin, side-notched points with an excurvate blade shape.

Measurements.—Thirty-six points representative of the variation within the type provided the measurements. Since 20 specimens from this group, mostly the larger points, have tip fractures, their lengths had to be estimated. Length of Type 1 ranges from 2.4 to 5.0 cm, averaging 3.6 cm; the majority (63%) are between 3.0 to 4.0 cm. The 16 unfractured points, or 44% of the total, range in length from 2.4 to 4.2 cm and average 3.2 cm. Width ranges from 1.6 to 2.8 cm and the majority (66%) fall between 2.0 to 2.5 cm. Thickness ranges from 3.0 to 6.0 mm, averaging 4.2 mm. Raccoon Notched points are distinctively thin. The majority (72%) of Type 1 range between 3.0 to 4.0 mm in thickness. Stem length ranges from 7.0 to 12.0 mm and averages 8.6 mm. Basal thickness ranges from 2.0 to 4.0 mm, averaging 2.7 mm.

Form.—In cross-section these side-notched points are often flattened but occasionally are plano-convex; the blade is excurvate with the edges occasionally finely serrated. The distal end is most often acuminate but is occasionally acute. The hafting area is side-notched with the notches ranging from 3.0 to 6.0 mm in depth and averaging 4.1 mm. The basal edge may be incurvate, straight, or excurvate; is usually thinned; and in most specimens is lightly ground. See Appendix I for other measurements.

Flaking.—The point preforms were either derived through the reduction of glacial pebbles by percussion flaking or fashioned from straight flakes struck from quarry blocks. The preforms were further shaped by the removal of broad, shallow, random flakes and retouched with fine finishing flakes. The base was thinned by the removal of one or more broad flakes, occasionally resulting in shallow fluting halfway up the length of the point. On some specimens, a narrow basal notch from the thinning process is visible. The basal edge evidences fine retouching. The notches were formed by the removal of broad flakes from the dorsal and ventral surfaces, generally resulting in deep, U-shaped notches. These notches were placed on the side of the hafting area from 0°, angling to 20° toward the basal edge.

Remarks.—The side-notched excurvate blade variety of the Raccoon Notched Type 1 point is the most numerous type in the total sample. These points are small in size, averaging only 3.6 cm in length with an average weight of only 2.9 g. This suggests that most of them were utilized on an arrow shaft.

A range of variation is recognized within this type. Although the blade edges are excurvate, the individual points vary, with the maximum width occurring across the base, on the shoulder, or as much as halfway up the blade. Thus the blade varies from egg-shaped to roughly triangular. A small percentage

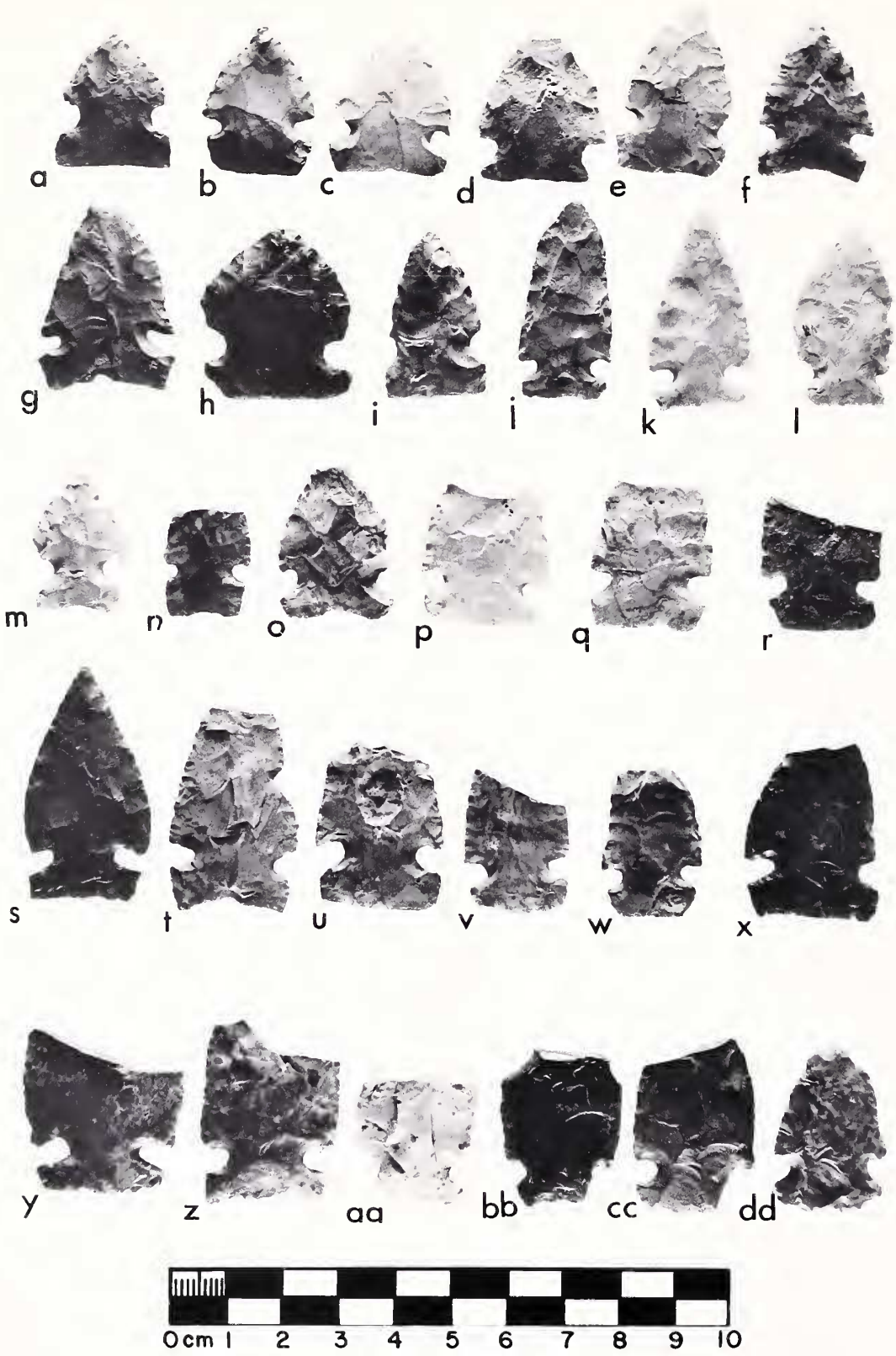

Fig. 4.—Type 1: Range of variation in Raccoon Side Notched points. a. Onondaga, 36 WA 98; b. Onondaga, 36 BV 24; c. Flint Ridge, 36 BV 24; d. Coshocton, 36 BV 24; e. Onondaga, 36 WA 99; f. Onondaga, 36 BV 24; g. Onondaga, 36 BV 20; h. Coshocton, 36 BV

of the type is asymmetrical and may have functioned as hafted knives.

Distribution.—Type 1 with side-notching is prevalent on all Upper Ohio Valley sites analyzed, ranging from 50% of all the related types at the Buckaloons sites to 70% at the Outdoor Theater site.

Variation within the type.—Type 1 is the major form of the Raccoon Notched point as described by Mayer-Oakes (1955:Plates 34, 35, 98). Its main characteristics are the somewhat equal length-to-width ratio, causing a stubby appearance, and its square to concave side-notched base.

Figures 3A and 4y show examples of a variant within Type 1, characterized by their ovate form and extreme central width. This same variant occurs in Type 2 with the only difference being the corner-notching. The variant seems to be widespread in western Pennsylvania, recorded at 36 BV 6, 36 BV 24, 36 ER 31, 36 WA 29, and 36 WA 99.

A second variation within Type 1 is illustrated in Figs. 3B and 4n. Similar to Ritchie's Long Bay point from the Canoe Point phase of early Point Peninsula in New York, dated at A.D. 240 ± 80 years, (Ritchie, 1971:125), this variant is a narrow, excurvate Raccoon Notched point that generally has an extended base. This is not a common form in the Upper Ohio Valley and is known mostly from the Buckaloons sites. The example in Fig. 3B is from the Polk Farm site, 36 VE 124, in Venango County.

Type 2. Raccoon Corner Notched Points with Excurvate Blades (Figs. 5, 6).

General description.—These are small, thin, corner-notched points with excurvate blades.

Measurements.—Twenty-five points representative of the variation within the type provided the following measurements: length ranges from 2.4 to 4.8 cm, averaging 3.7 cm, with the majority (68%) measuring between 3.0 and 4.3 cm. The width ranges from 2.0 to 2.9 cm, averaging 2.4 cm, and the majority (64%) are between 2.2 to 2.6 cm. Thickness ranges from 4.0 to 6.0 mm and averages 4.3 mm. Stem length is 7.0 to 10 mm and averages 9.0 mm. Basal thickness ranges from 2.0 to 3.0 mm, averaging 2.2 mm. The 14 unfractured points (56% of the sample) range from 2.4 to 4.6 cm in length to average 3.3 cm.

Form.—Often flattened and occasionally plano-convex in cross-section, this point has a blade that

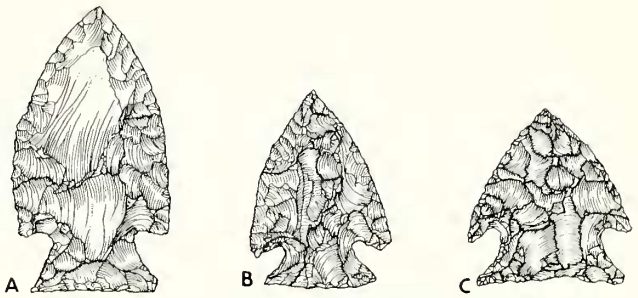

Fig. 5.—Type 2: Raccoon Corner Notched points with excurvate blades. A. Flint Ridge, 36 BV 20; B. Delaware, 46 HK 6; C. Coshocton, 36 AL 61.

is excurvate with the edges occasionally plano-convex and sometimes finely serrated. The distal end is most often acuminate but is occasionally acute. The hafting area is corner-notched with the notches ranging from 3.0 to 7.0 mm in depth, averaging 5.2 mm. The basal edge may be incurvate, straight, or excurvate; is usually thinned and in most specimens is lightly ground. See Appendix I for other measurements.

Flaking.—The point preforms were derived through the reduction of glacial pebbles by percussion flaking, or else they were fashioned from straight flakes struck from quarry blocks. The preforms were further shaped by the removal of broad, shallow, random flakes and then retouched with fine, finishing flakes. The base was thinned by the removal of one or more broad flakes which occasionally resulted in shallow fluting extending up to half the length of the point. A small, narrow, basal notch from this fluting process is still present on some specimens. After thinning, the basal edge was finely retouched. The notches were formed by the removal of broad flakes from the dorsal and ventral surfaces, resulting in deep, expanding U-shaped notches. These notches were placed at or near the corner of the hafting area and this ultimately reduced the width of the basal edge.

Remarks.—The corner-notched excurvate blade variety of the Raccoon Notched point is the second most numerous type in the study. These points are essentially the same as Type 1; however, they are corner- rather than side-notched. A small percent-

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24; i. Onondaga, 36 BV 4; j. Onondaga, 36 WA 99; k. Flint Ridge, C-33 MU 34; l. Delaware, 36 WA 99; m. Delaware, 36 BV 24; n. Onondaga, 36 WA 99; o. Onondaga, 36 WA 99; p. Flint Ridge, 33 LI; q. Onondaga, 36 WA 99; r. Coshocton, 36 WA 99; s. Onondaga, 36 BV 6; t. Onondaga, 36 WA 29; u. Onondaga, 36 WA 98; v. Onondaga, 36 WA 99; w. Onondaga, 36 WA 99; x. Coshocton, 36 BV 9; y. Onondaga, 36 WA 99; z. Coshocton, 36 BV 24; aa. Delaware, 36 WA 31; bb. Coshocton, C-33 MU 34; cc. Coshocton, 36 WA 29; dd. Onondaga, 36 WA 99.

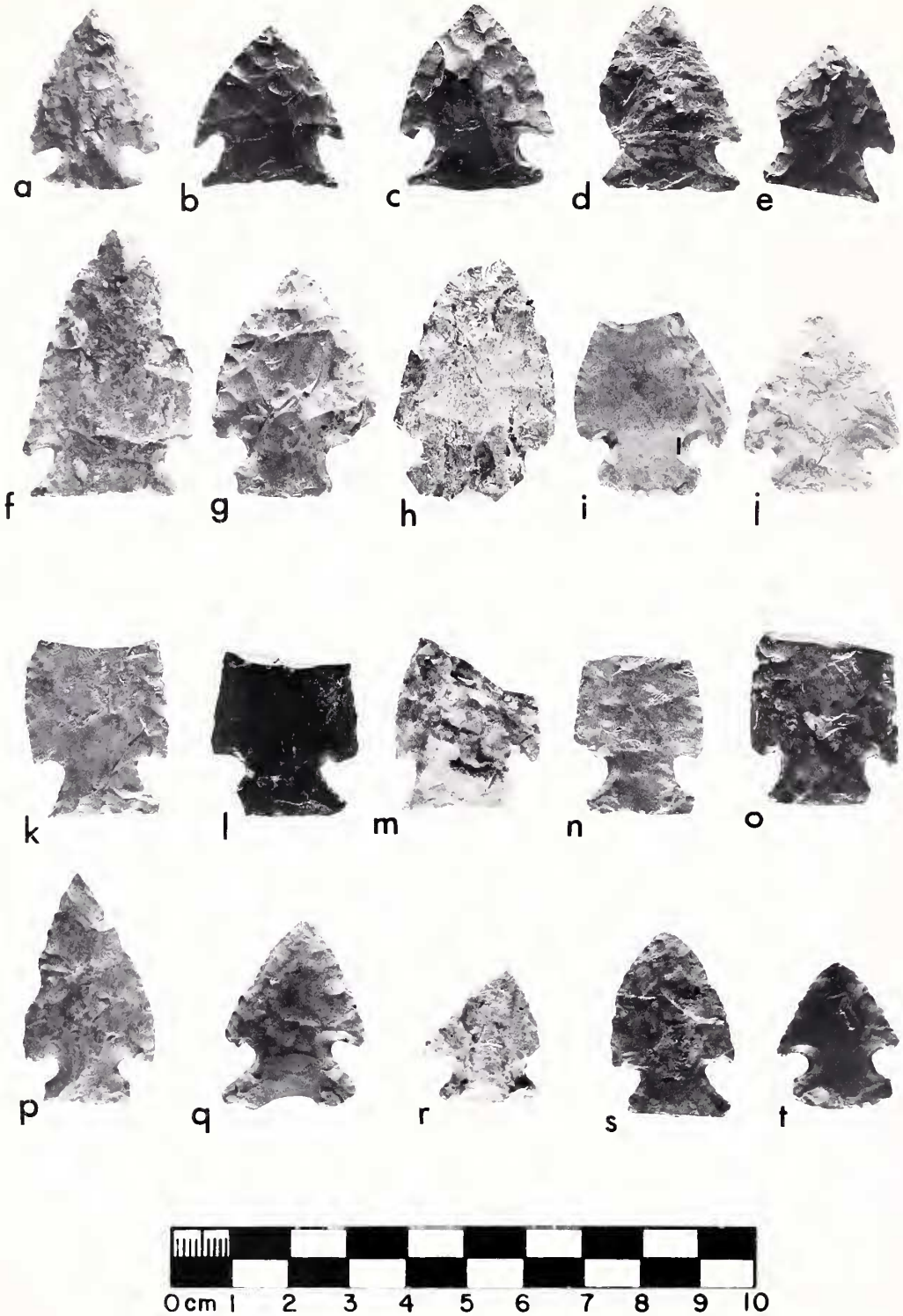

Fig. 6.—Type 2: Range of variation, Raccoon Corner Notched points. a. Coshocton, 46 HK 6; b. Coshocton, 36 AL 61; c. Coshocton, C-33 MU 34; d. Coshocton, C-33 MU 34; e. Coshocton, C-33 MU 34; f. Coshocton, C-33 MU 34; g. Onondaga, 36 WA 94; h. Coshocton, 36 BV 24; i. Onondaga, 36 WA 95; j. Coshocton, 36 BV 23; k. Coshocton, 36 BV 20; l. Coshocton, 36 BV 25; m. Coshocton, 36 BV 111; n. Coshocton, 36 BV 25; o. Coshocton, C-33 MU 34; p. Onondaga, 36 WA 98; q. Onondaga, 36 WA 98; r. Onondaga, 36 WA 99; s. Onondaga, 36 WA 99; t. Onondaga, 36 WA 98.

age of the type appear to have served as knives. As is the case with Type 1, a high percentage of the larger-sized forms are fractured and lengths had to be estimated. The average length of 3.3 cm and the light weight, averaging only 3.8 g, suggest that this point type was related to the use of the bow and arrow.

Distribution.—Type 2 is distributed throughout the Upper Ohio Valley but is more prevalent in the north. The Outdoor Theater site in Beaver County produced only 3% of the type, while the Buckaloons sites in Warren County have 21 to 29% and the Melnick site in Erie County yielded 25% of the Type 2 forms. The significance of this percentage difference cannot be addressed at the present time; however, it may reflect a variation that is either regional or timed to a specific portion of the Middle Woodland period.

Type 2 of the assemblage is comparable to the Alabama Corner Notched Woodland type, one of which was obtained at Russell Cave in Jackson County, Alabama, and dated around A.D. 450 (Cambron and Hulse 1969:69).

Variation within the type.—There are three variants of Type 2; the first is shown in Figs. 5A and 6k–o. It is characterized by its long, slender appearance, occasionally having almost straight parallel sides with corner-removed notching. This variant is more common in Beaver County, Pennsylvania, and is rare in the northern counties of the state. It is also present in the Buker collection from site C-33 MU 34, Muskingham County, Ohio. The variant is comparable to the larger version of the Jack's Reef Corner Notched point (Ritchie, 1965: Plate 80, No. 20). It is not known why the distribution of the variant is exactly opposite to that of Type 2 as a whole.

The second variant, shown in Figs. 5B and 6a and f, is generally smaller and exhibits narrower corner-notching than most of the Type 2 points. The third variation within Type 2 is shown in Figs. 5C and 6b–e. It is most numerous at the Melnick site in Erie County (Fig. 25g–i). Most similar to the side-notched Type 1D, it is characterized by an almost equal length-to-width ratio and a large corner-removed notch. The last two variants are minor to rare on Raccoon Notched point sites and are similar to the Jack's Reef Corner Notched point (Ritchie, 1971: Plate 11, No. 13).

Type 3. Raccoon Pentagonal Side Notched Points (Figs. 7; 8a–g, i–n).

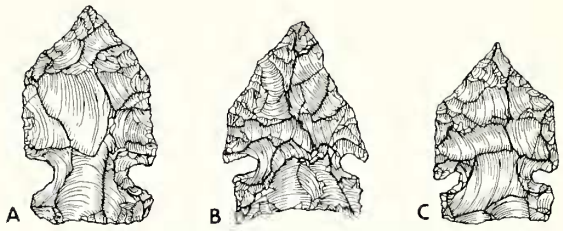

Fig. 7.—Type 3: Raccoon Pentagonal Side Notched points. A. Delaware, 36 WA 98; B. Coshocton, 36 BV 24; C. Coshocton, C-33 MU 34.

General description.—These are small, thin, side-notched points having angular edges.

Measurements.—Fifteen points representative of the variation within the type provided following measurements: length ranges from 2.2 to 3.8 em, averaging 2.9 em. The majority (80%) measure between 2.5 to 3.5 cm. The width ranges from 1.8 to 2.6 cm, averaging 2.1 cm. The majority (66%) measure between 2.0 to 2.3 cm. Thickness ranges from 3.0 to 5.0 mm, averaging 4.0 mm, and stem length ranges from 7.0 to 11.0 mm with an average of 8.4 mm. Basal thickness ranges from 2.0 to 3.0 mm, averaging 2.5 mm.

Form.—In cross-section this type is often flattened but is occasionally plano-convex. The blade is angular and pentagonal with the edges occasionally finely serrated. The distal end is most often acuminate but occasionally it is acute. The hafting area is side-notched with the notches ranging in depth from 3.0 to 5.0 mm, averaging 4.0 mm. The basal edge may be incurvate, straight, or excurvate; is usually thinned; and in most specimens is lightly ground. See Appendix I for other measurements.

Flaking.—Basically, this point type was manufactured in the same manner as was Type 1; however, it was retooled toward the distal end by the removal of flakes for an unknown specialized function. A straight edge was maintained in the flaking process, giving the point an angular look and reducing the length of the blade.

Remarks.—This point type is less common than Types 1 and 2. Within the type, variation is recognized, with some specimens exhibiting equilateral, angular edges and others having blade edges of unequal length and angle. The average length of this type (2.9 cm) is less than the 3.6 cm of Type 1 and the 3.8 cm of Type 2. This shortness may have resulted from resharpening a tip-fractured point to convert it into some kind of specialized tool—possibly even a retooled cutting instrument on its original shaft.

Distribution.—Type 3 is found throughout the Upper Ohio Valley but it occurs in its highest fre-

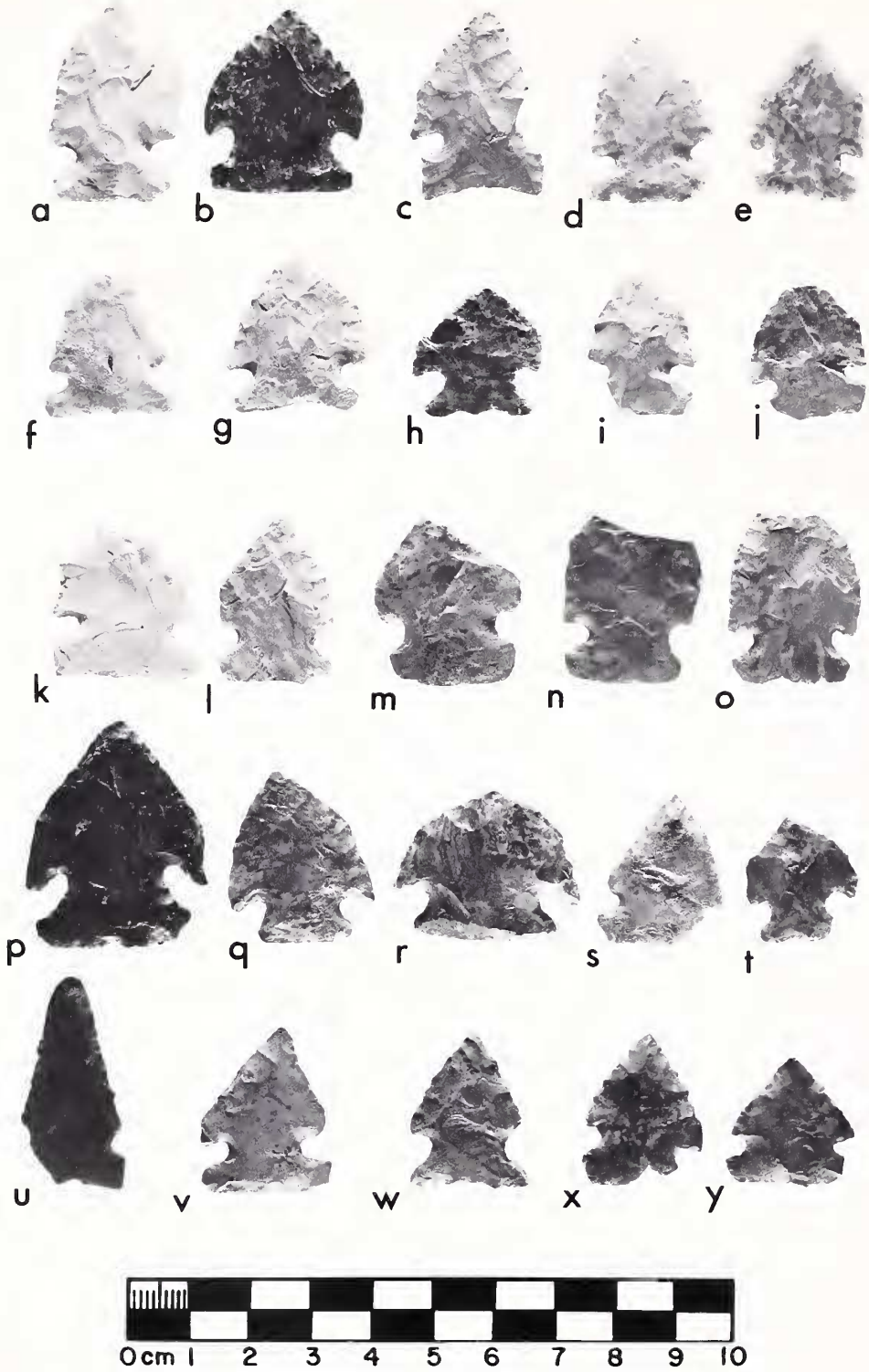

Fig. 8.—Range of variation in Raccoon Pentagonal Side Notched points. Type 3: Raccoon Pentagonal Side Notched points: a. Delaware, 36 WA 98; b. Coshocton, 46 HK 6; c. Coshocton, 36 BV 24; d. Coshocton, C-33 MU 34; e. Coshocton, C-33 MU 34; f. Onondaga, 36 BV 24; g. Onondaga, 36 WA 96; i. Onondaga, 36 WA 99; j. Onondaga, 36 WA 99; k. Flint Ridge, C-33 MU 34; l. Coshocton, 36 BV 24; m. Onondaga, 36 WA 31; n. Onondaga, 36 WA 31; o. Onondaga, 36 WA 29. Type 4: Raccoon Pentagonal Corner Notched points: h. Coshocton, 36 BV 24; p. Coshocton, 33 LI; q. Onondaga, 36 BV 24; r. Coshocton, 46 HK 34; t. Onondaga, 36 WA 95. Type 5: Raccoon Notched Side and Corner Notched points on straight blades: s. Coshocton, 36 BV 24; u. Unknown, 36 BV 24; v. Onondaga, 36 WA 99; w. Onondaga, 36 WA 99; x. Coshocton, 36 BV 24; y. Onondaga, 36 WA 90.

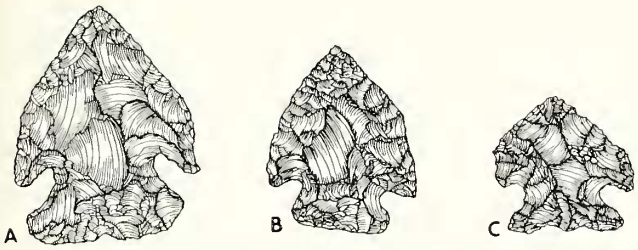

Fig. 9.—Type 4: Raccoon Pentagonal Corner Notched points. A. Coshocton, 33 LI; B. Onondaga, 33 BV 24; C. Coshocton, 36 BV 24.

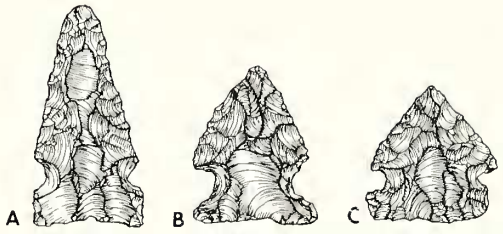

Fig. 10.—Type 5: Raccoon Side and Corner Notched points on straight blades. A. Unknown, 36 BV 24; B. Onondaga, 36 WA 29; C. Onondaga, 36 WA 90.

quency at the Outdoor Theater site in Beaver County, Pennsylvania. This pentagonal form has been included within the Jack's Reef typology (Ritchie, 1971:26, and Plate 11).

Variation within the type.—Many of the Type 3 points appear to have been subjected to extensive retooling, resulting in a wide range of variation within the type. On Fig. 7, A and C are symmetrical whereas B has a short angular blade on the left and a long, straight blade on the right.

Type 4. Raccoon Pentagonal Corner Notched Points (Figs. 8h, p–r, t; 9).

General description.—These are small, thin, corner-notched points having angular edges.

Measurements.—Eight points representative of the variation within the type provided the following measurements: length ranges from about 2.0 to 3.8 cm, averaging 2.9 cm. The width ranges from 1.8 to 3.0 cm, averaging 2.3 cm, and thickness ranges from 4.0 to 5.5 mm with the average being 4.6 mm. Stem length ranges from 7.0 to 9.0 mm, averaging 7.6 mm, and the basal thickness ranges from 2.0 to 3.0 mm, averaging 2.3 mm.

Form.—In cross-section this type is often flattened but occasionally is plano-convex. The blade is angular, pentagonal, and occasionally finely serrated. The distal end is most often acuminate but sometimes it is acute. The hafting area is corner-notched with the notches ranging in depth from 4.0 to 7.0 mm, averaging 5.5 mm. The basal edge may be incurvate, straight, or excurvate; is usually thinned; and in most specimens is lightly ground. See Appendix I for other measurements.

Flaking.—This point type was manufactured in a similar manner as was Type 2; however, it was retooled toward the distal end by the removal of flakes for an unknown specialized function. A straight edge was maintained in the flaking process, giving the point an angular look and reducing the length of the blade.

Remarks.—This minority type varies from Type 3 by being corner- rather than side-notched.

Distribution.—Type 4 points were recovered at the Outdoor Theater site in Beaver County (13% of the total recovered), at Buckaloons in Warren County (36 WA 29, 13%; 36 WA 99, 6%), and at the Melnick site in Erie County (4%).

Type 5. Raccoon Side and Corner Notched Points on Straight Blades (Figs. 8s, u–y; 10).

General description.—These are small, thin, side- and corner-notched points having straight edges.

Measurements.—Eight points representative of the variation within the type provided the following measurements: length ranges from 1.7 to 3.5 cm, averaging 2.6 cm. The majority (63%) are between 2.0 to 3.0 cm. The width ranges from 1.7 to 2.3 cm, averaging 2.0 cm, with the majority falling between 1.8 and 2.0 cm. Thickness ranges from 3.0 to 5.0 mm, averaging 4.1 mm. Stem length ranges from 6.0 to 8.0 mm, averaging 7.2 mm. Basal thickness ranges from 2.0 to 3.0 mm with the average being 2.3 mm.

Form.—In cross-section this type is often flattened but occasionally is plano-convex. The blade is straight—or almost so—with the edges occasionally serrated. The distal end is most often acuminate but sometimes it is acute. The hafting area is side- or corner-notched with the notches ranging in depth from 2.0 to 5.0 mm, averaging 3.8 mm. The basal edge may be incurvate, straight, or slightly excurvate; is usually thinned; and in most specimens is lightly ground. See Appendix I for other measurements.

Flaking.—Essentially, this point type was produced in the same manner as Types 1 and 2; however, the distal end was tooled to a straight edge from the tip to the notch by the removal of additional flakes, occasionally spaced so as to leave the edge serrated.

Remarks.—Because of the small sample, both corner- and side-notched varieties were included within this type. The blades may have been reworked until the angular edges intersected the notches. This type may have had its origin in Types 3 and 4. Occasionally these points, as well as some of the other types, exhibit a small thin notch somewhere along the basal edge. See the illustrations of Types 2, 3, and 4.

Raccoon Notched Points as Arrow Points

For years archaeologists have speculated about the beginning date for the use of the bow and arrow. Many have concluded that the bow and arrow emerged during the Middle Woodland period but this is difficult to prove, especially in the Northeast where perishables are rarely preserved and sufficient radiocarbon dates are lacking. Generally all that remains for study is a complex assortment of stone projectile points, and it is difficult to determine if these tools are associated with javelins, atlatls and darts, or bows and arrows.

The weight and size of a given stone projectile point do not positively determine function. Many Archaic points such as the LeCroy are often as small and as thin as points utilized in later Woodland times. Therefore, many of the assumptions made when attempting to date the origin of the bow and arrow in North America have been derived from historic evidence and rely on comparisons of prehistoric lithics with modern arrowheads. Sporting goods stores report that the weight of the modern steel arrowhead ranges from 8 to 10 g. The five types of Raccoon Notched points average 3.1 g, or one-third the weight of the modern steel arrowhead. Chipped stone projectile points that can be mounted on a split or notched shaft are generally not more than 5 mm in thickness, well above the average thickness (2.3 mm) of the Raccoon Notched points. Heavier and larger stone points, when used on arrow shafts, are thought to have been mounted with a socket arrangement (Hamilton, 1982:27).

Some of the heaviest arrow shafts and point tips known were used by nineteenth- and twentieth-century Columbian Indians in South American rain forests. Their short-range arrows were mounted with thin iron arrowheads weighing up to 15 g, or over twice as much as the heaviest Raccoon Notched point at 6.8 g (Hamilton, 1982:54–65).

Perhaps more relative to establishing the beginning date for the bow and arrow and the use of Raccoon Notched points as arrow tips is the known association of the Raccoon Notched points with the triangular Levanna points. The association of Levanna points with Jack's Reef Corner Notched varieties is well documented by Ritchie in New York, where the Levanna point emerged around A.D. 700. Ritchie noted that the Raccoon Notched points bear resemblances to the Jack's Reef forms and he further projected his belief that Levanna and Jack's Reef points were utilized as arrow points (Ritchie, 1965: 243; 1971:32).

Furthermore, Bell (1958:76, 77) listed the side-notched Reed point of the Gibson and Fulton aspect in Oklahoma (A.D. 500 to A.D. 1500) as an arrow point. The similarity of this point to the Raccoon Notched Type 1C (Fig. 3) has already been noted.

The concept that at least some of the Raccoon Notched and associated Levanna points were used on arrow shafts is supported by data in this report. The thinness of the points suggests they were fashioned for mounting on small shafts. Furthermore, the weight and small size support the postulated function as arrowheads. It is reasonable to assume that the somewhat abrupt appearance of triangular points in Pennsylvania around A.D. 600 was the time that the bow and arrow was introduced.

Knives

Knives were divided into four types by their configuration and attributes. The validity of the classification as knives rather than preforms or points requires some definition. The eoncept that blades utilized as knives would be asymmetrical was applied in the analysis and the tools were examined for evidence of fine retouching, edge wear, and edge beveling. The Type 1 knives, for example, have one straight edge, sometimes angular to curved. The opposite blade edge curves more sharply to the tip and the blades are asymmetrical in form. On all Type 1 specimens, the cutting edge is finely flaked with the high points showing edge wear under microscopic examination. Preforms would not have these attributes; nor would finished points be intentionally asymmetrical. All illustrated examples were verified as having been utilized as knives through examination under a binocular microscope.

Type 1. Raccoon Excurvate Knives (Figs. 11; 12a, b, d, e, k–m).

General description.—These are thin, unnotched knife blades with an excurvate shape. When one looks at their length and width, they are proportionately wider than other tools.

Measurements.—Few complete specimens were available for measurement; of the 65 blades examined in the total study, 15 were complete enough to be placed in this category. As far as can be determined, the measurements of these blades closely conform with those of the Raccoon Notched point Types 1 and 2. Blade length ranges from 2.4 to 5.0 cm; the width from 1.6 to 2.9 cm; and thickness from 3.0 to 6.0 mm.

Form.—In cross-section the excurvate knife is often flattened but occasionally is plano-convex. The blades have excurvate and generally asymmetrical

edges that sometimes are finely serrated. The distal end is most often acuminate but occasionally it is acute. The hafting area is unnotched, with its length generally determined by the presence of edge grinding. The basal edge may be incurvate, straight, or excurvate; is usually thinned; and in most specimens is lightly ground.

Flaking.—The knife preforms were either derived through the reduction of glacial pebbles by percussion flaking or fashioned from straight flakes struck from quarry blocks. The preforms were further shaped by the removal of broad, shallow, random flakes followed by retouching. The base was thinned by the removal of one or more broad flakes, occasionally resulting in shallow fluting on up to half the length of the blade. The basal edge and hafting area were finely retouched.

Remarks.—This knife type in all its various forms differs little from the Type 1 point, other than the lack of notches. If symmetrical, these knives could easily pass as point preforms. Type 1B is similar in form to the Jack's Reef Pentagonal points described by Ritchie (1971:28). This knife form is generally broader than Type 2; however, it could morphologically grade into the lanceolate form described below. Knives similar in form are illustrated in Ritchie (1965:Plates 81, 88).

TYPE 2. Raccoon Lanceolate Knives (Figs. 12f–j; 13).

General description.—These are long, thin, unnotched knife blades that are lanceolate in form and have a greater length-to-width ratio. Specimens often have a straight edge opposite a more curved edge. All examples have fine retouching and edge wear.

Measurements.—Few complete specimens were available; however, of the 65 blades in the total study sample, 15 were complete enough to be assigned to this type. As far as can be determined, the blades range in length from 3.8 to 6.0 cm; in width from 2.0 to 2.5 cm; and in thickness from 3.0 to 5.0 mm.

Form.—In cross-section Type 2 knives are often flattened but occasionally are plano-convex. The blade edges tend to be parallel above the base; however, toward the distal end, one edge is often straight and the other excurvate. The hafting area is unnotched, with its length determined by the presence of light edge grinding. The distal end is most often acuminate and the basal edge is straight to slightly excurvate and seldom incurvate. The base has been thinned on all specimens.

Flaking.—Essentially, the preform of this knife was manufactured in the same manner as Type 1; however, it was fashioned from either a larger glacial flint pebble or a large quarry block flake to produce the longer blade. Very fine and controlled finishing flakes were removed from the basal edge and from the hafting area.

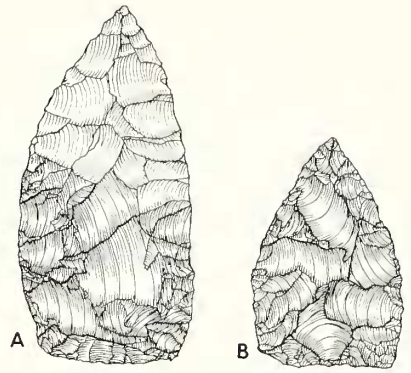

Fig. 11.—Type 1: Raccoon Excurvate knives. A. Onondaga, 36 WA 29; B. Coshocton, 33 LI.

Remarks.—This knife form is generally more than twice as long as it is wide; however, some specimens could grade morphologically into the Type 1 knife forms. Ritchie (1965:Plates 81, 88) illustrates several knives of this type.

TYPE 3. Raccoon Pentagonal Knives (Figs. 12c, n–o; 14).

General description.—These are thin, unnotched pentagonal knife blades with angular edges.

Measurements.—Few complete specimens were available for measurement; however, of the 65 blades examined in the total study, ten were complete enough to be placed in this category. As far as can be determined, the measurements of these blades would conform with those of the Raccoon Notched point Types 3 and 4. The length of the pentagonal knives range from 2.0 to 3.8 cm, width from 1.8 to 3.0 cm, and thickness from 3.0 to 5.0 mm.

Form.—In cross-section these knives are often flattened and occasionally are plano-convex. The blade edges are angular, pentagonal, and occasionally finely serrated. The distal end is acuminate but sometimes it is acute. The hafting area is unnotched and generally lightly ground. The basal edge may be incurvate or excurvate, but it is generally straight, usually thinned, and in most specimens lightly ground.

Flaking.—This knife type was manufactured in a similar manner to Type 1; however, it was retooled toward the distal end by the removal of finishing flakes for an unknown, specialized function. A straight edge was maintained during the flaking pro-

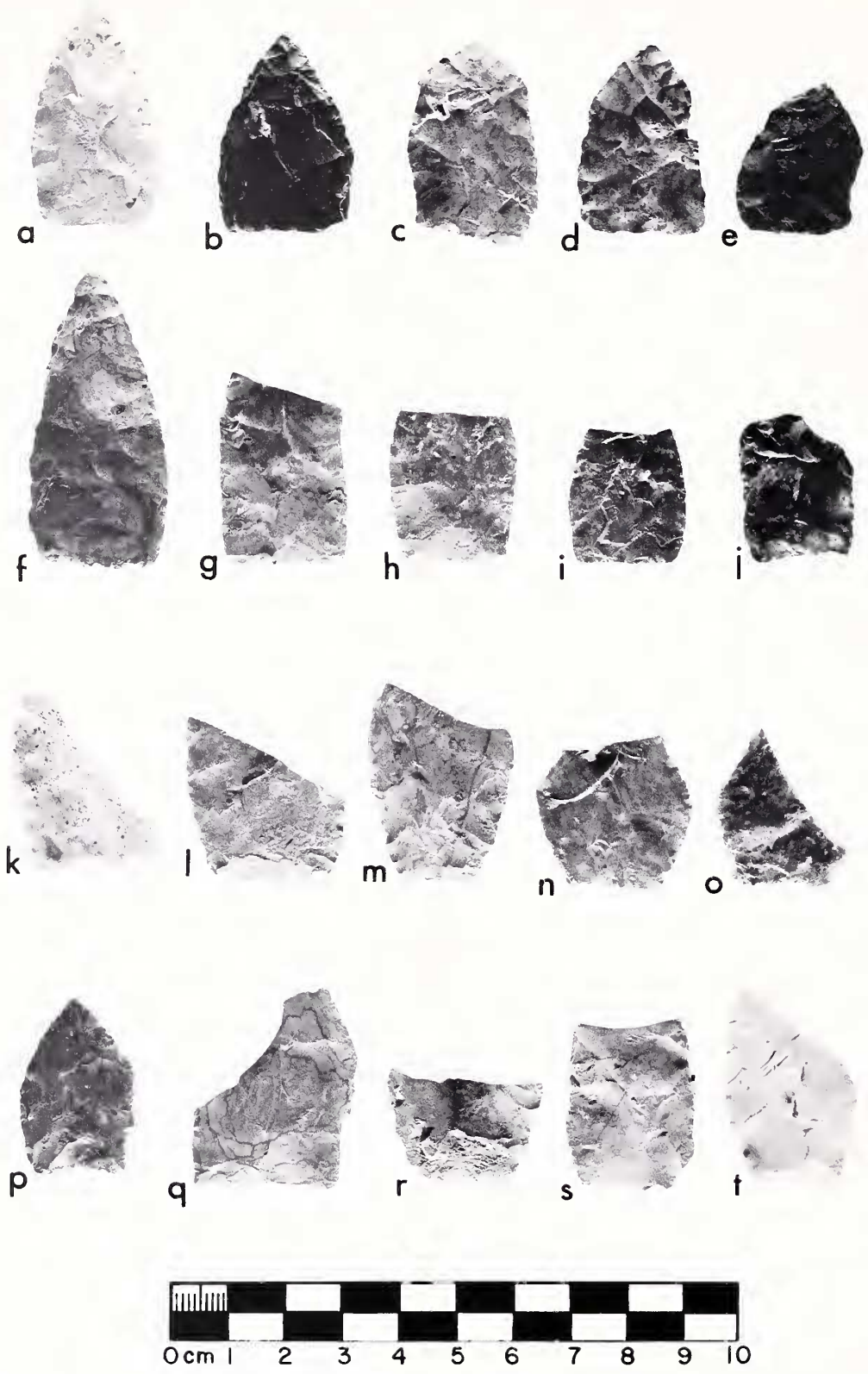

Fig. 12.—Range of variation of Raccoon Excurvate knives. Type 1: Raccoon Excurvate knives: a. Delaware, 36 WA 99; b. Coshocton, 33 LI; d. Onondaga, 36 WA 98; e. Unknown, 36 WA 98; k. Flint Ridge, 36 BV 24; l. Onondaga, 36 WA 99; m. Onondaga, 36 WA 98. Type 2: Raccoon Lanceolate knives: f. Onondaga, 36 WA 99; g. Onondaga, 36 WA 99; h. Onondaga, 36 WA 99; i. Coshocton, 36

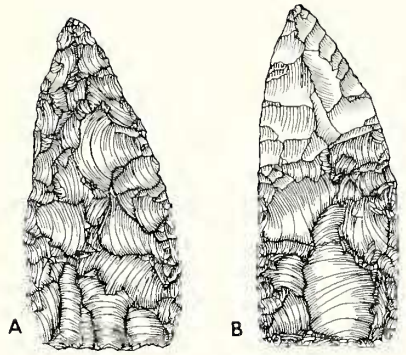

Fig. 13.—Type 2: Raccoon Lanceolate knives. A. Onondaga, 36 WA 99; B. Onondaga, 36 WA 99.

cess, giving the knife an angular look and reducing the length of the blade.

Remarks.—Other than the missing notches, this knife type is similar in form to point Types 3 and 4 and, when nearly symmetrical, would compare to the Jack's Reef Pentagonal point (Ritchie, 1971:80). Ritchie's illustrated examples are not symmetrical and appear to be knives rather than projectile points. Tools similar to the pentagonal knife form are included in the taxonomy of the Intrusive Mound Culture of Ohio (Morgan, 1952:93; Seeman, 1980: 11). This pentagonal knife is the most controversial of the four defined types. Ritchie (1971:28) has classified the pentagonal forms as Jack's Reef Pentagonal points. Others have suggested that these blades are preforms for pentagonal corner- and side-notched points. The typing as knives is based on asymmetry, edge wear, and beveling on finely retouched edges. Complete knives of this type are extremely rare; only three were complete enough for measurements and these were all from the Buckaloons sites in Warren County, Pennsylvania. If a larger sample was available for study, the suggestion that some specimens were projectile points could be validated.

TYPE 4. Raccoon Corner Removed Knives (Figs. 12p–t, 15).

General description.—These are thin, corner-removed knife blades with excurvate to angular edges.

Measurements.—Few complete specimens were available; however, ten corner-notched forms were recognized in the total sample of 65 knives. The blades range in length from 3.2 to 5.0 cm; in width from 2.0 to 3.0 cm, and in thickness from 3.0 to 5.0 mm.

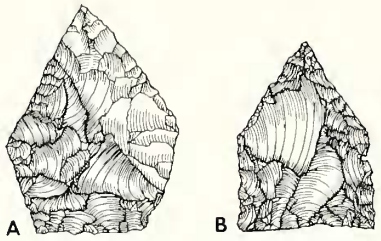

Fig. 14.—Type 3: Raccoon Pentagonal knives. A. Coshocton, 36 BV 9; B. Onondaga, 36 WA 99.

Form.—In cross-section the Type 4 knives are often flattened and occasionally are plano-convex. The blade edges may be excurvate to angular, are generally asymmetrical, and sometimes finely serrated. The distal end is most often acuminate but occasionally it is acute. The hafting area was created by the removal of one corner and blade edge, leaving a weak, horizontal to tapered shoulder and an incipient stem. The hafting area ranges in length from 5.0 to 13.0 mm. The basal edge is straight, excurvate, or incurvate, and is thinned on all specimens. The basal edge and hafting area are lightly ground.

Flaking.—Basically, the preform for this knife was produced in the same manner as Type 1; however, the hafting area received special treatment by the removal of fine finishing flakes along one side of the stem edge.

Remarks.—The removal of one corner and stem edge is the distinguishing factor in identifying the Type 4 knife; otherwise it resembles all of the preceding knife types. This type is represented in collections from the Buckaloons, Outdoor Theater, and Melnick sites.

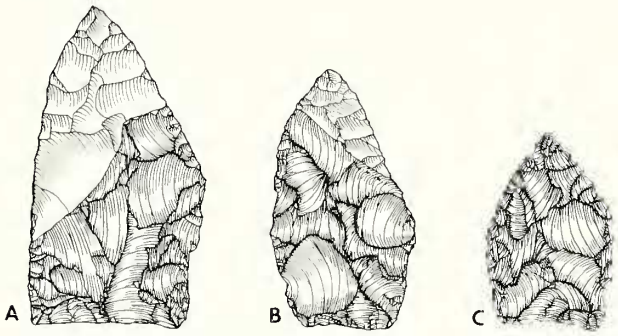

Fig. 15.—Type 4: Raccoon Corner Removed knives. A. Flint Ridge, 36 BV 24; B. Onondaga, 36 WA 99; C. Onondaga, 36 WA 99.

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BV 9; j. Coshocton, 36 BV 24. Type 3: Raccoon Pentagonal knives: c. Onondaga, 36 WA 98; n. Onondaga, 36 BV 24; o. Coshocton, 36 BV 9. Type 4: Raccoon Corner Removed knives: p. Onondaga, 36 WA 99; q. Flint Ridge, 36 BV 24; r. Onondaga, 36 WA 98; s. Onondaga, 36 WA 98; t. Delaware, 36 WA 99.

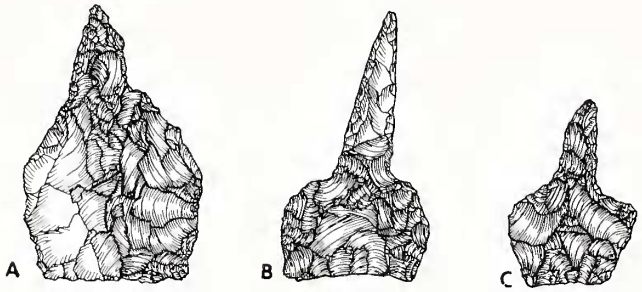

Fig. 16.—Type 1: Raccoon Ovoid Base drills. A. Delaware, 36 BV 24; B. Coshocton, 36 BV 9; C. Onondaga, 36 WA 91.

Drills

All of the drill types were manufactured from preforms, some of which resisted lateral thinning. The configurations of the bases divide the drills into four types:

Type 1. Raccoon Ovoid Base Drills (Figs. 16; 17a, b, d).

General description.—These are thin, ovate-base drills with slender bits.

Measurements.—Many specimens in various collections were examined by the author; however, only four complete drills of this type were available for measurement. The largest complete specimen was 4.6 cm in length. The basal length of one ovate-base drill was 3.2 cm, while the width was 3.9 cm.

Form.—In cross-section the base is thin and biconvex and the bit is narrow and diamond-shaped. The distal end is most often acuminate. The hafting area is always contracting and unnotched and most often is lightly ground. The basal edge is straight, occasionally incurvate, and thinned on all specimens.

Flaking.—The production of these thin drills is identical to that of the Type 1 knife.

Remarks.—The base of this drill simulates the form of the Type 1 knife.

Variation within the type.—There are three variants of the Type 1 drill. Specimens shown on Figs. 16A and 17b were manufactured from an ovate preform with the maximum thickness being at the juncture of the extended base and bit, suggesting the recycling of point or knife preforms that could not be thinned for proper use as their first intended function. The main characteristic is a long, wide base with a short bit. A second variant (Figs. 16B; 17a, d) has the same basal configuration; however, the bit has been extended, thus shortening the base. The third variant (Fig. 16C) is recognized by its narrow basal edge, suggesting manufacture from an ovate preform.

Type 2. Raccoon Rectangular Base Drills (Figs. 17c, 18).

General description.—These are thin, rectangular drills with T-shaped bases and slender bits.

Measurements.—Although many specimens are present in various collections, only one complete drill was available for measurement. This specimen measures 4.2 cm in length. All smaller specimens have broken bits; however, the length range probably coincides with the knife types. In width, the rectangular-base drills range from 1.8 to 2.7 cm and the length of the base ranges betwen 14.0 and 19.0 mm.

Form.—In cross-section the base is thin and biconvex; the bit is narrow and diamond-shaped. The unnotched hafting area is parallel to contracting but occasionally is expanding. Most specimens evidence light basal grinding. The basal edge is straight to incurvate, seldom excurvate, and thinned on all specimens studied.

Flaking.—The drill preforms were derived through the reduction of glacial pebbles by percussion flaking, or else they were fashioned from straight flakes struck from quarry blocks. The preforms were further shaped by the removal of broad, shallow, random flakes, and the blade sections were reduced by the removal of small, short, and thick flakes to leave a narrow bit section. The base was thinned by the removal of one or more broad flakes. Both the hafting area and the basal edges were retouched with fine finishing flakes.

Remarks.—Many of the bases of these drills resemble the bases found on Types 2 and 3 knives. This type shows variation in the length of the bits; however, the main characteristic is the parallel-sided base. The type also exhibits unusual thickness at the base of the bit.

Type 3. Raccoon Side and Corner Notched Base Drills (Fig. 19).

General description.—These are side- and corner-notched points with the blades retooled into drill bits.

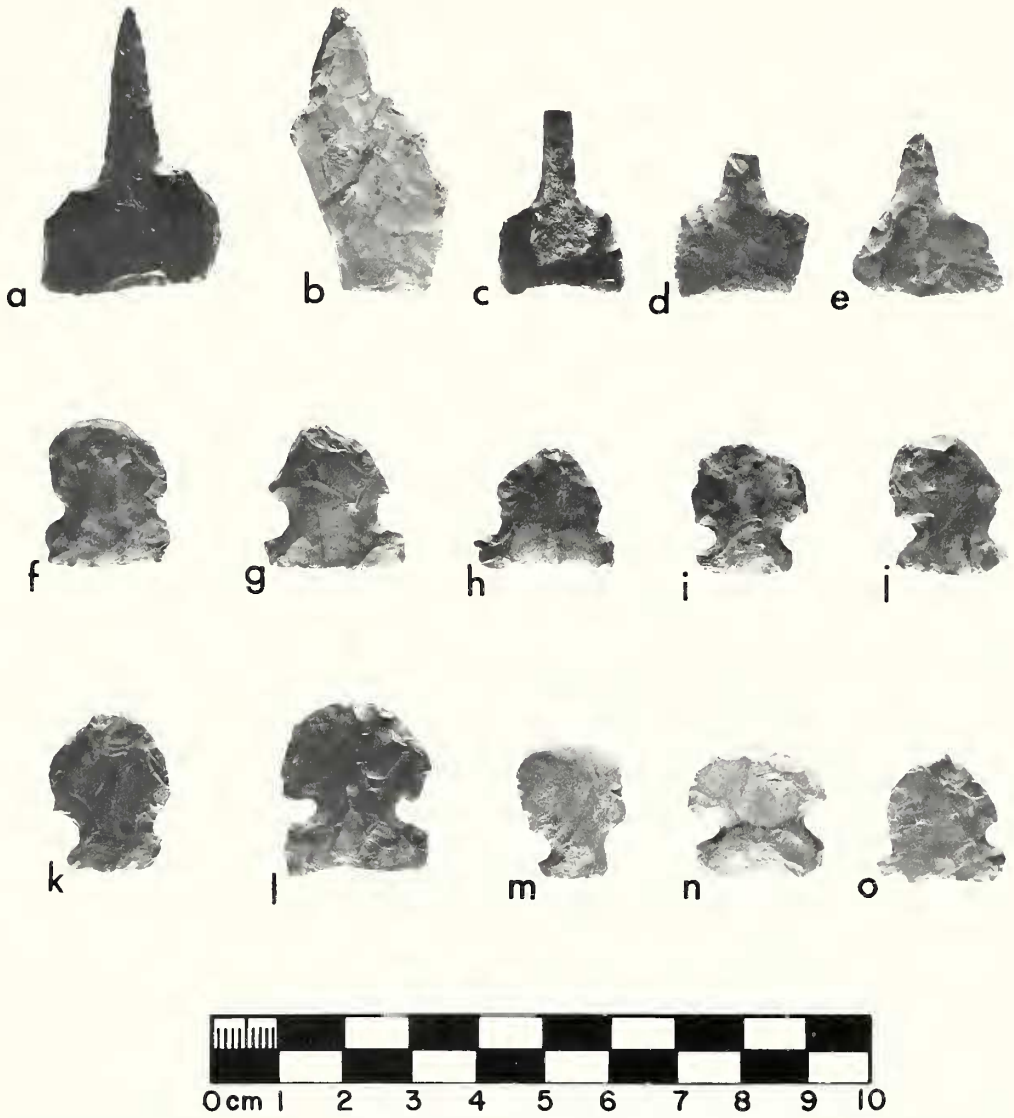

Fig. 17.—Range of variation, Raccoon Ovoid Base drills, strike-a-lights, and scrapers. Type 1: Raccoon Ovoid Base drills: a. Coshocton, 36 BV 9; b. Delaware, 36 BV 24; d. Coshocton, 36 BV 24. Type 2: Raccoon Rectangular Base drill: c. Coshocton, 36 BV 24. Type 4: Raccoon Triangular Base drill. e. Onondaga, 36 BV 24. Type 1: Raccoon Side and Corner Notched strike-a-lights: f. Onondaga, 36 WA 99; g. Onondaga, 36 WA 99; h. Onondaga, 36 BV 24; i. Onondaga, 36 WA 98; j. Onondaga, 36 WA 99. Type 1: Raccoon Side and Corner Notched scrapers: k. Onondaga, 36 WA 99; l. Onondaga, 36 BV 9; m. Onondaga, 36 BV 98; n. Onondaga, 36 BV 24; o. Delaware, 36 BV 24.

Measurements.—Eight complete specimens were available for measurement. With the exception of the retooled blade section, all measurements coincide with the point types. These drills are unusually thick at the point of expansion at the base of the bit, measuring from 0.6 to 1.0 cm, evidently being recycled from point rejects that were too thick for hafting.

Form.—With the exception of the bit, the side- and corner-notched drills simulate the point types.

Flaking.—The drills are flaked in the same manner as the point types; the upper blade has been reduced by the removal of small, short, and thick flakes to produce a narrow bit.

Remarks.—The bit of the side- and corner-notched base drills is often extremely acute and may have functioned as a reamer. These drills were often manufactured from point preforms of point Type 5c, and in some cases it is difficult to distinguish these from the Type 4 drills, made from triangular points, because of occasional shallow notching on the Type 3 drills.

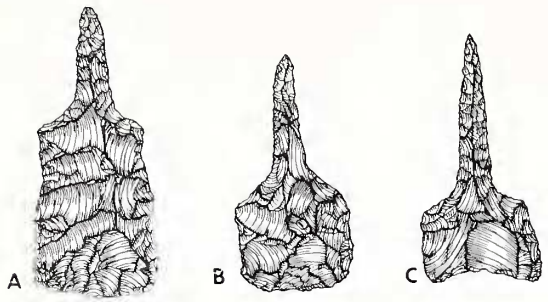

Fig. 18.—Type 2: Raccoon Rectangular Base drills: A. Onondaga, 36 WA 99; B. Onondaga, 36 WA 99; C. Coshocton, 36 BV 24.

Type 4. Raccoon Triangular Base Drills (Figs. 17e, 20).

General description.—These are drills with triangular bases.

Measurements.—Although many specimens are found in collections, only 11 were complete enough for measurement. The largest complete specimen is 4.0 cm in length while the smallest is 2.0 cm. In width, they range from 1.6 to 3.5 cm while thickness ranges from 0.4 to 1.0 cm with the majority measuring over 0.7 cm.

Form.—These drills were derived from triangular points or triangular point rejects; therefore, their size and shape varies.

Flaking.—The base sections were reduced by the removal of broad, shallow, random flakes. The blade sections were reduced by the removal of small, thick flakes to narrow the bit, but leaving the bit thicker than the base.

Remarks.—Triangular drills are distinguished from points by the presence of polish on the tips. The triangular forms are the most prevalent drill types on Raccoon Notched point locations. Examples are shown in Figs. 20A–C; 17e; 23w; 25cc, dd; and 27aa. The unusual thickness and the presence of "humps" from deep-hinged terminations during thinning also suggest they were manufactured from point preform rejects.

Strike-a-Lights

Strike-a-lights are found on all Raccoon Notched point sites and are a second utilization of tip-fractured points or point rejects.

Type 1. Raccoon Side and Corner Notched Strike-a-Lights (Figs. 17f, j; 21).

General description.—These are small, side- and corner-notched points with battered distal ends.

Measurements.—Seven complete specimens show a range in length between 1.8 and 2.2 cm with an average of 2.0 cm. Width ranges from 1.6 to 2.3 cm, averaging 1.9 cm; thickness ranges from 0.4 to 0.7 cm. Stem length ranges from 0.7 to 1.2 cm, averaging 0.89 cm, and basal thickness ranges from 0.3 to 0.4 cm, averaging 0.32 cm.

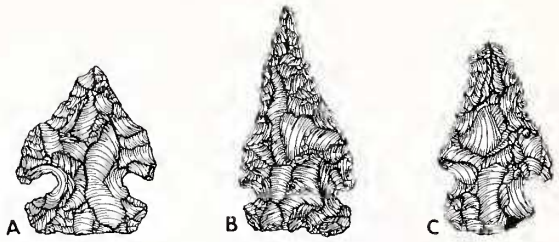

Fig. 19.—Type 3: Raccoon Side and Corner Notched Base drills: A. Onondaga, 36 WA 81; B. Onondaga, 36 WA 98; C. Onondaga, 36 WA 99.

Form.—In cross-section the notched strike-a-lights are bi-convex but occasionally are plano-convex. Edges are generally asymmetrical and excurvate to angular. The distal end is thick, rounded, and always battered. The hafting area is side- or corner-notched, with the notches of the measured specimens usually shallow, averaging 0.26 cm. The basal edge may be incurvate, straight, or occasionally excurvate and is usually thinned; some specimens are lightly ground. See Appendix I for other measurements.

Flaking.—The strike-a-lights were manufactured by the same method employed in the production of Types 1 and 2 points. The distal ends are battered, obliterating all previous primary and secondary flaking.

Remarks.—The measured sample was too small to establish the complete size range and variations within the type. It is reasonable to assume that lengths would be comparable to those of the points, but perhaps reduced through retooling. The strike-a-lights appear to be a secondary utilization of tip-fractured points or point rejects. The average thickness of the measured specimens was greater than the average of the projectile points, further suggesting that rejects were used in the production of strike-a-lights.

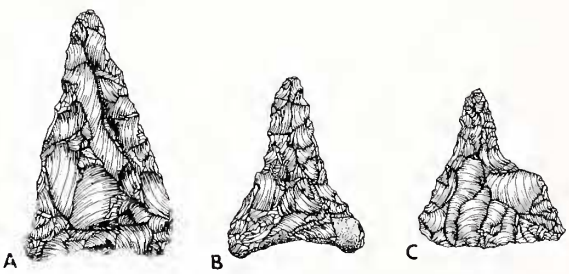

Fig. 20.—Type 4: Raccoon Triangular Base drills: A. Onondaga, 36 ER 31; B. Onondaga, 36 ER 31; C. Onondaga, 36 BV 24.

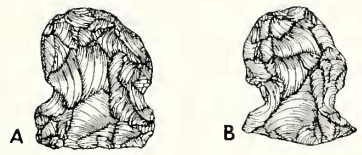

Fig. 21.—Type 1: Raccoon Side and Corner Notched strike-a-lights: A. Onondaga, 36 WA 99; B. Onondaga, 36 WA 99.

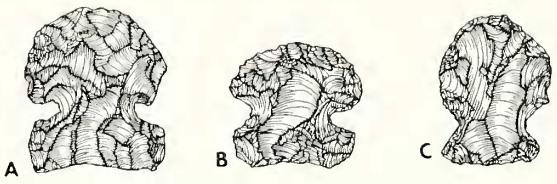

Fig. 22.—Type 1: Raccoon Side and Corner Notched scrapers. A. Onondaga, 36 BV 9; B. Onondaga, 36 BV 24; C. Onondaga, 36 WA 99.

Hafted Scrapers

Hafted scrapers are found on all Raccoon Notched point sites and, like the strike-a-lights, are manufactured from tip-fractured points or point rejects.

Type 1. Raccoon Side and Corner Notched Scrapers (Figs. 17k–o, 22).

General description.—These are small, thin, side- and corner-notched points with blunt and rounded distal ends.

Measurements.—Five complete specimens provided the following measurements: length ranges from 2.0 to 2.5 cm, averaging 2.2 cm. The width ranges from 1.6 to 2.2 cm with the average being 1.9 cm. Thickness ranges from 0.4 to 0.6 cm, and stem length ranges from 0.7 to 1.1 cm, averaging 0.92 cm. The thickness of all four bases was 0.3 cm.

Form.—In cross-section the scrapers are bi-convex but occasionally are plano-convex. The distal end of the blade edge is excurvate to completely rounded, ground, and polished; and often exhibits acute flaking. The hafting area is side- or corner-notched and the depth of the notch averages 0.35 cm. The basal edge may be incurvate or straight, is occasionally excurvate and usually thinned, and most specimens are lightly ground. See Appendix I for other measurements.

Flaking.—The hafted scrapers were manufactured by the same productive techniques as point Types 1 and 2; however, the distal ends have been blunted by the removal of small finishing flakes from one or both faces, resulting in a lateral or unifacial scraping edge.

Remarks.—The measured sample was too small to establish the complete range of sizes and variations within the type, but it is reasonable to assume that these measurements are comparable to the point types since these tools were likely made from tip-fractured points or point rejects. With the exception of the blade length, which is shorter than the average of the points, all other measurements are comparable. The most significant trait of the type is the presence of polish on the distal end of the scraper. Initially, the distal end exhibited small finishing flaking; however, continued use created polish that obliterated the flake scars. One specimen (Fig. 17o) has a graver spur.

Other Tools

Other tools not specifically described or included as part of the tool kit are pitted and unpitted hammer stones, anvil stones, pestles, and net sinkers. Some celts, pendants, a pipe, and ceramics from three major Raccoon Notched Point Assemblage sites are briefly detailed below.

OCCURRENCE OF THE ASSEMBLAGE AT THREE WESTERN PENNSYLVANIA SITES

Appendix II lists the 502 Middle Woodland sites identified during the search of the CMNH archaeological site files; 236 of these report the presence of tools from the Raccoon Notched Point Assemblage. Five sites were notable for the occurrence of the Raccoon Notched point types. Percentages for the incidence of the Raccoon Notched point types from these locations in Beaver, Warren, and Erie counties are tabulated on Table 1. In the following analysis, three of these locations, the Outdoor Theater site, 36 BV 24; the Melnick site, 36 ER 31; and the Buckaloons site, 36 WA 99, are examined. The Outdoor Theater site is located on Raccoon Creek in southwestern Pennsylvania; Melnick is situated 160 air km north on the South Branch of French Creek; and the Buckaloons site is located 64 km east of Melnick on the Allegheny River (see Fig. 1). All are situated on extensive floodplains. The evidence from these widely separated sites substantiates the concept of a Raecoon Notched Point Assemblage.

Table 1.—*Percentages for the incidence of Raccoon Notched point types from five major site locations.*

Type	Fig. no.	Site	Location	% of points/site
1. Raccoon Side Notched with excurvate blade (57% of grand total)	3, 4	Outdoor Theater 36 BV 24	Beaver Co., PA	70%
		Melnick 36 ER 31	Erie Co., PA	62%
		Buckaloons 36 WA 29	Warren Co., PA	52%
		36 WA 98		64%
		36 WA 99		50%
2. Raccoon Corner Notched with excurvate blade (22% of grand total)	5, 6	Outdoor Theater 36 BV 24	Beaver Co., PA	3%
		Melnick 36 ER 31	Erie Co., PA	25%
		Buckaloons 36 WA 29	Warren Co., PA	26%
		36 WA 98		21%
		36 WA 99		29%
3. Raccoon Pentagonal Side Notched (6% of grand total)	7, 8	Outdoor Theater 36 BV 24	Beaver Co., PA	10%
		Melnick 36 ER 31	Erie Co., PA	4%
		Buckaloons 36 WA 29	Warren Co., PA	5%
		36 WA 98		7%
		36 WA 99		8%
4. Raccoon Pentagonal Corner Notched (8% of grand total)	8, 9	Outdoor Theater 36 BV 24	Beaver Co., PA	13%
		Melnick 36 ER 31	Erie Co., PA	4%
		Buckaloons 36 WA 29	Warren Co., PA	13%
		36 WA 98		0%
		36 WA 99		6%
5. Raccoon Side and Corner Notched on Straight Blade (7% of grand total)	8, 10	Outdoor Theater 36 BV 24	Beaver Co., PA	7%
		Melnick 36 ER 31	Erie Co., PA	4%
		Buckaloons 36 WA 29	Warren Co., PA	9%
		36 WA 98		7%
		36 WA 99		8%

Without a full series of radiocarbon dates it is not possible to determine if the point types changed through time or if all the types were in continuous use throughout the postulated A.D. 500 to A.D. 950 dates for the assemblage (a summary of available radiocarbon dates follows this section). However, Ritchie's New York data for the Middle Woodland Point Peninsula Culture and its two phases, Kipp

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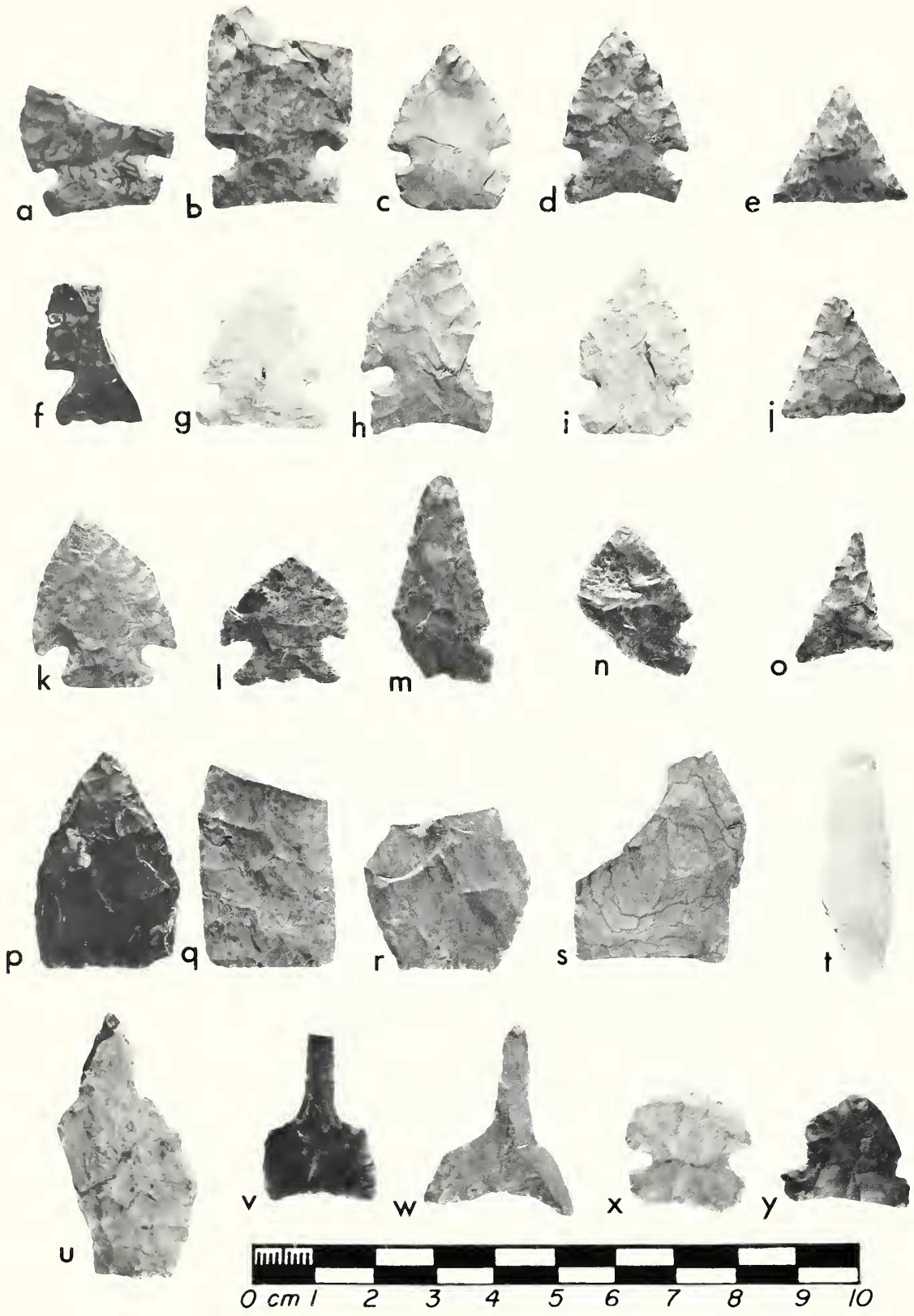
Fig. 23.—The Raccoon Notched Point Assemblage from the Outdoor Theater site, 36 BV 24. a–d. Type 1, Raccoon Side Notched points with excurvate blades; f. Type 2, Raccoon Corner Notched points with excurvate blades; g–i. Type 3, Raccoon Pentagonal Side Notched points; k, l. Type 4, Raccoon Pentagonal Corner Notched points; m, n. Type 5, Raccoon Side and Corner Notched points on straight blades; p. Type 1: Raccoon Excurvate knife; q. Type 2: Raccoon Lanceolate knife; r. Type 3: Raccoon Pentagonal knife; s. Type 4: Raccoon Corner Removed knife; u. Type 1: Raccoon Ovoid Base drill; v. Type 2: Raccoon Rectangular Base drill; w. Type 4: Raccoon Triangular Base drill; x. Type 1: Raccoon Side Notched scraper; y. Type 1: Raccoon Side Notched strike-a-light; e, j, o. Levanna points; t. Knife made on a utilized flake.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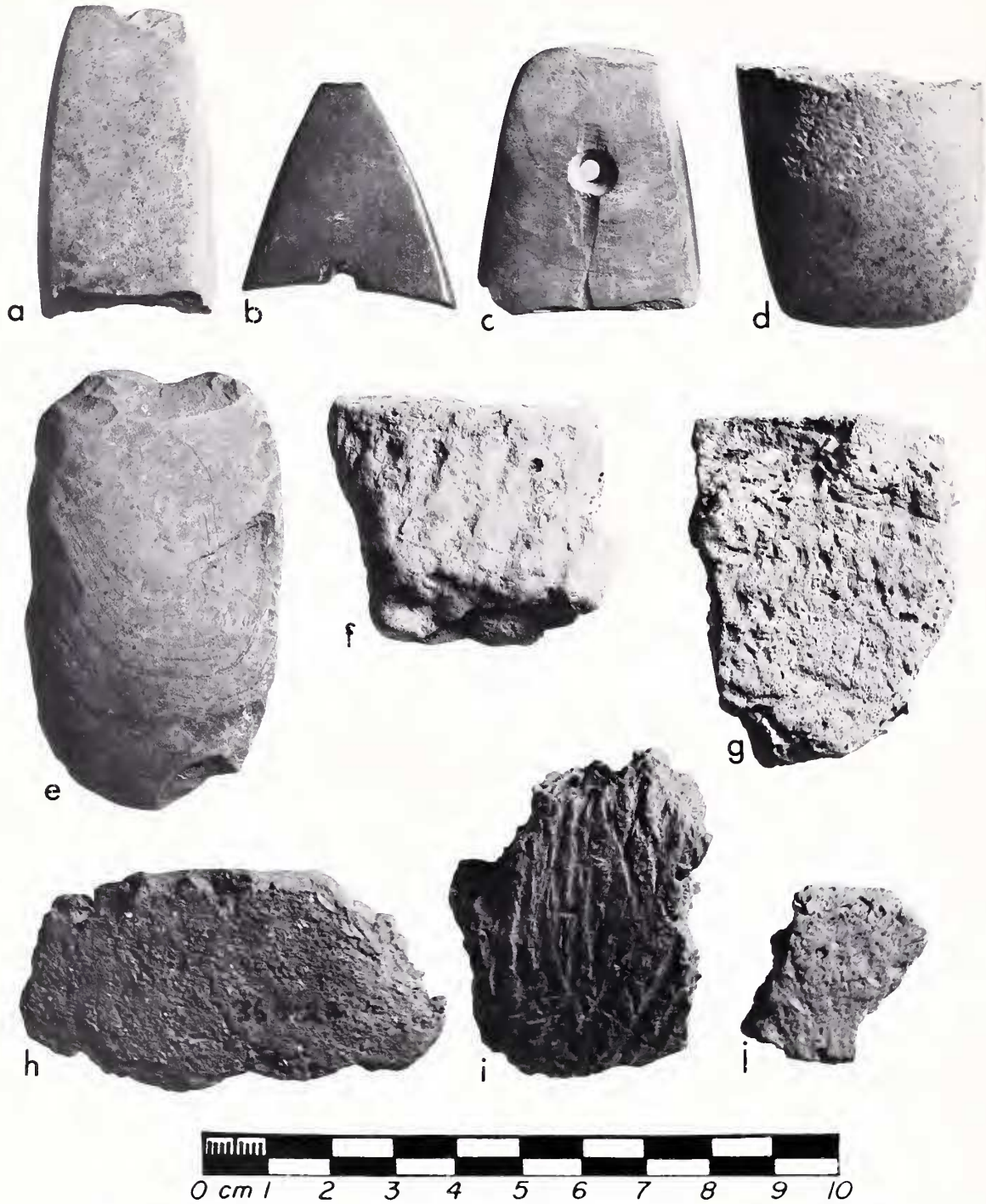

Fig. 24.—Artifacts associated with the Raccoon Notched Point Assemblage at the Outdoor Theater site, 36 BV 24. a–c. Broken stone pendants of banded slate; d, e. Celts of granite and slate; f. Rim sherd, smoothed-over, cord exterior with horizontal interior channelling and sandstone temper; g. Mahoning Cordmarked rim sherd, smoothed-over cord exterior, smooth interior with folded-down, weak collar and quartz temper; h. Rim sherd, smooth exterior and horizontally channeled interior with sandstone and quartz temper; i. Body sherd with corded exterior and smooth interior and sandstone temper; j. Watson Plain rim sherd, smooth interior and exterior with limestone tempering.

Island and Hunters Home, tend to confirm the suggested dates for the Raccoon Notched Point Assemblage.

The Outdoor Theater Site, 36 BV 24

The type station for the distinctive Raccoon Notched points, this location has produced all of the point and tool types in the assemblage, namely, points, knives, drills, a scraper, and a strike-a-light, as well as Levanna triangular points. Another common item on Raccoon Notched point sites, a utilized flake knife, is also recorded for 36 BV 24. The tools are shown in Fig. 23; Fig. 24 contains the pendants, celts, and ceramics that accompany the point and tool assemblage. The associated Middle Woodland artifacts are similar to those identified by Ritchie from the New York White site, a Hunters Home phase occupation circa A.D. 900 ± 250 years (Ritchie, 1965:253–259). The sherds share traits with Mahoning Cordmarked (Mayer-Oakes, 1955:191) and Watson Plain ceramics (Mayer-Oakes, 1955: 195). Mahoning Cordmarked pottery was excavated in association with Raccoon Notched points at the Howard Chambers site (36 LR 3) in Lawrence County, Pennsylvania (Johnson, 1976:62).

The Melnick Site, 36 ER 31

Figures 25 and 26 show Arnold Bailey's collection from this site; again, all of the Raccoon Notched point and tool types are represented, but the Type 3 Raccoon Pentagonal knives were not included in the photograph. Also unavailable for photography was a small steatite, straight-base platform pipe. All of the tools were manufactured from glacial-drift Onondaga gray and tan cherts. The Middle Woodland ceramics consist of cord malleated surfaces with applied cord decorations similar to the Point Peninsula, Kipp Island phase of New York (Ritchie, 1965:227, 232). Also represented are rims of Jack's Reef Corded and Corded Collar types (Fig. 26f, g, i) and Kipp Island Crisscross (Fig. 26j). Rocker-stamping is quite rare in northwestern Pennsylvania and western New York; however, the interior surface of one body sherd shows evidence of this technique (Fig. 26h). One corded body sherd had separated along overlapping parallel joints, suggesting that the pot was manufactured by a large coil or sectioning method (Fig. 26k).

The Buckaloons Site, 36 WA 99

While nine of the Buckaloons sites produce Raccoon Notched material, 36 WA 99, located on the floodplain of the Allegheny River, is the most extensive and prolific. Examples of the entire assemblage are represented at this site (Fig. 27). Also shown (Fig. 27dd) is a fractured, straight-based, steatite platform pipe similar to one illustrated by Ritchie (1965:256) from the terminal Middle Woodland Hunters Home phase White site in New York. The ceramics from Buckaloons are similar to those reported for the Melnick site with corded motifs over cord-roughened surfaces (Fig. 28); however, a flint tempered rim embellished with a smooth paddle edge, identified as Steamburg Tooled, is also represented (Fig. 28a). This type is considered to be Middle to Late Woodland on Allegheny Iroquois sites (Dragoo and Lantz, 1973). Other rim forms include Jack's Reef Corded, Jack's Reef Corded Collar, and Kipp Island Crisscross. Artifacts shown in Figs. 27 and 28 are from controlled surface collections made by William Stuart and John Zavinski. Some of the material has been donated and/or loaned to CMNH.

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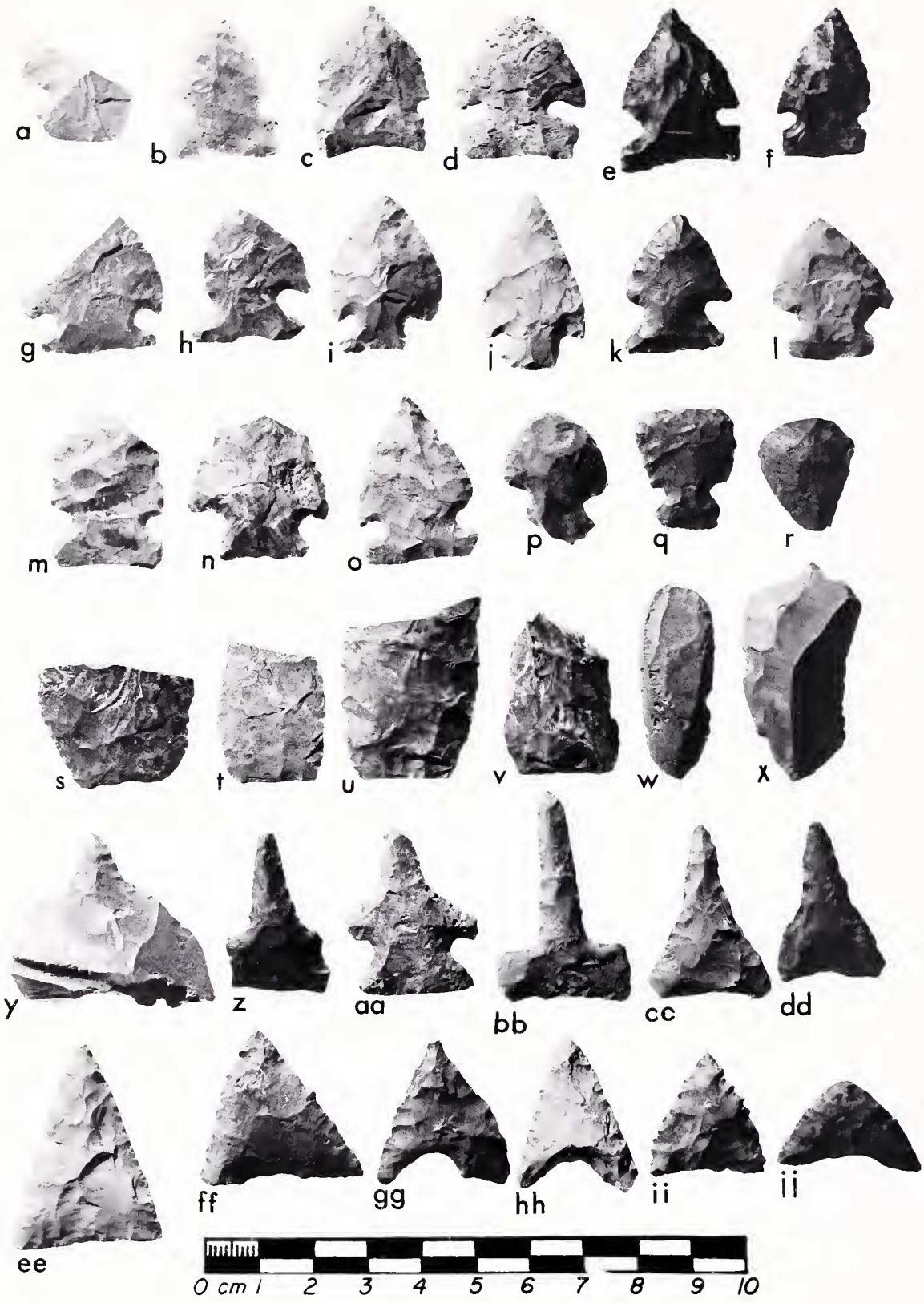
Fig. 25.—The Raccoon Notched Point Assemblage from the Melnick site, 36 ER 31. a–f. Type 1: Raccoon Side Notched points with excurvate blades; g–l. Type 2: Raccoon Corner Notched points with excurvate blades; m. Type 3: Raccoon Pentagonal Side Notched point; n. Type 4: Raccoon Pentagonal Corner Notched point; o. Type 5: Raccoon Side Notched point on a straight blade; s. Type 1: Raccoon Excurvate knife; t, u. Type 2: Raccoon Lanceolate knives; v. Type 4: Raccoon Corner Removed knife; y. Type 1: Raccoon Ovoid Case drill; z, aa. Type 3: Raccoon Side and Corner Notched Base drills; bb. Type 2: Raccoon Rectangular Base drill; cc, dd. Raccoon Triangular Base drills; p. Raccoon Corner Notched strike-a-light; q. Raccoon Side Notched scraper; r. Triangular scraper; w. Knife on a utilized flake; x. Utilized flake with spur; ee, ff, ii, jj. Levanna points; gg, hh. Extreme aberrant forms of the Waterford Triangle.

Fig. 26.—Artifacts associated with the Raccoon Notched Point Assemblage from the Melnick site, 36 ER 31. a. Slate celt; b–d. Slate pendants; e. Small grooved, quartz pebble hammerstone; f, g, i. Jack's Reef Corded and Corded Collar rim sherds; h. Body sherd with interior rocker-stamping; j. Kipp Island Crisscross rim sherd; k. Body sherd with coil breaks.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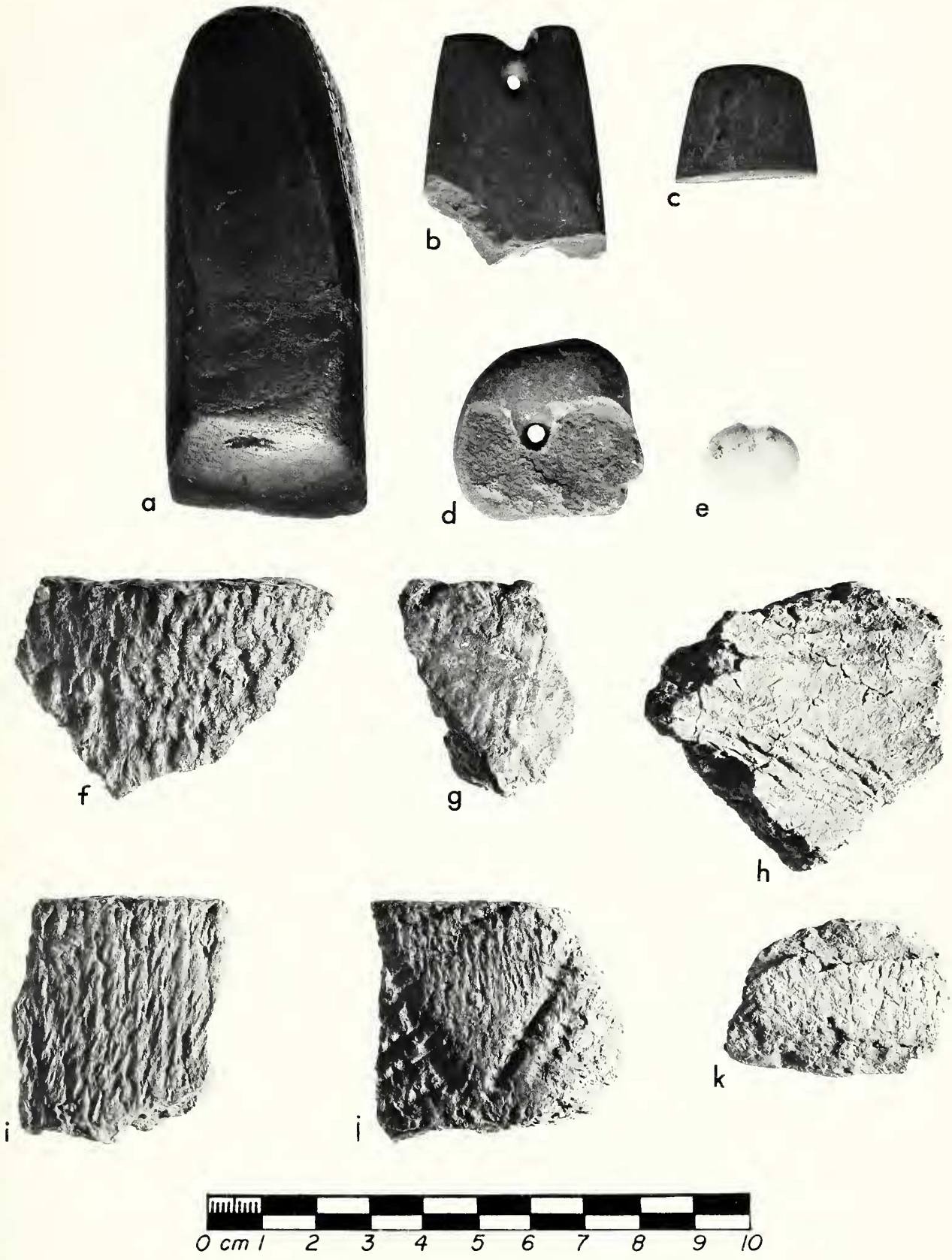
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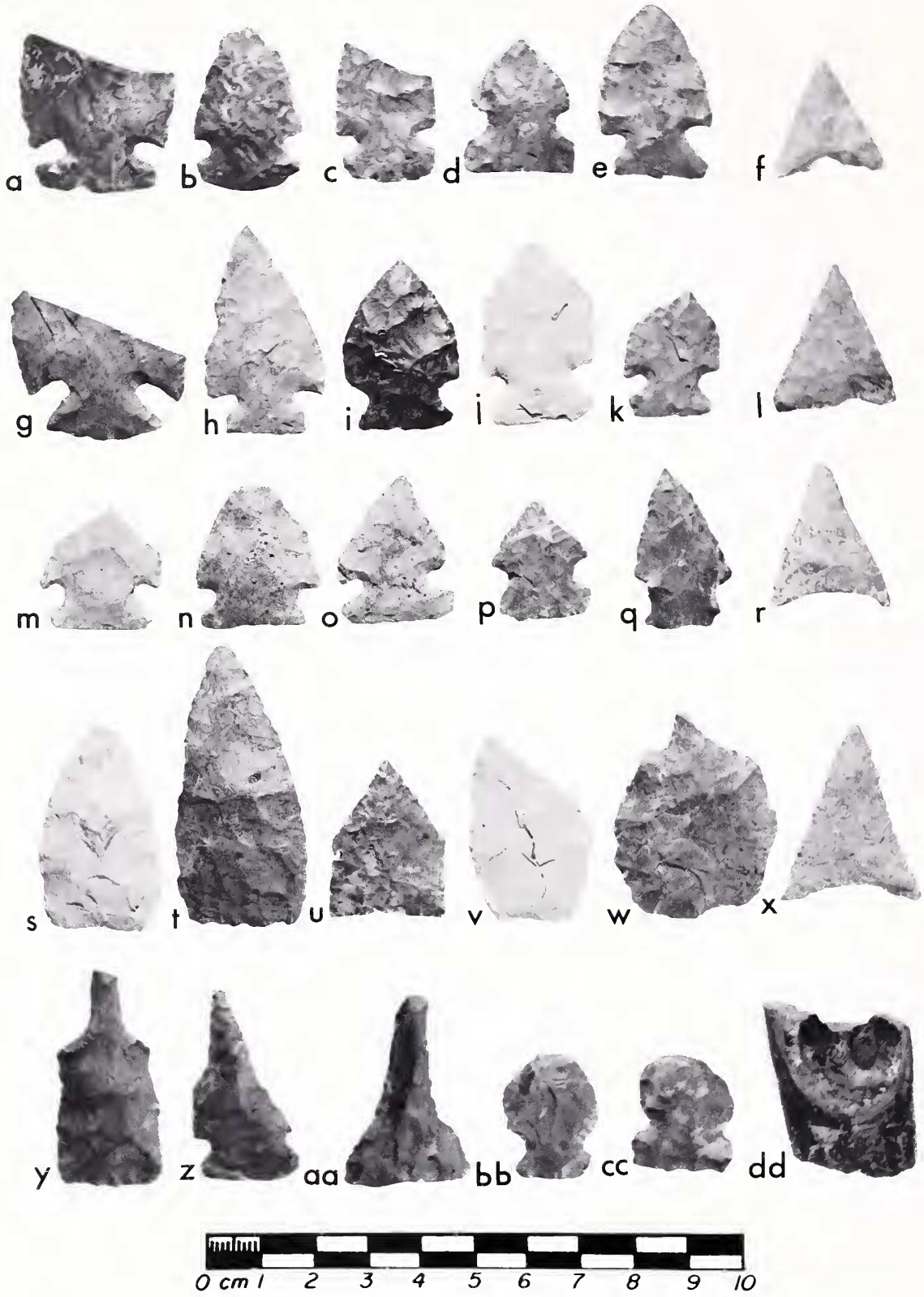

Fig. 27.—The Raccoon Notched Point Assemblage from the Buckaloons site, 36 WA 99. a–e. Type 1: Raccoon Side Notched points; g–i. Type 2: Raccoon Corner Notched points; j–k. Type 3: Raccoon Pentagonal Side Notched points; m–n. Type 4: Raccoon Pentagonal Corner Notched points; o–q. Type 5: Raccoon Corner Notched points on straight blades; s. Type 1: Raccoon Excurvate knife; t. Type

Fig. 28.—Ceramics associated with the Raccoon Notched Point Assemblage at Buckaloons sites 36 WA 99 and 36 WA 29. a. Steamburg Tooled rim sherd, flint-tempered; b, c, f. Jack's Reef Corded Collar rims; e. Kipp Island Crisscross rim sherd; d. Jack's Reef Corded rim.

SUGGESTED DATE RANGE FOR THE RACCOON NOTCHED POINT ASSEMBLAGE

The Raccoon Notched points and related tools were in use from the middle portion of the Middle Woodland period and into the initial Late Woodland. Radiocarbon dates for northwestern Pennsylvania and for the western tip of New York are well bracketed; however, the temporal range for the entire Upper Ohio Valley is less distinct. Radiocarbon dates are not available for sites located in either west central or southwestern Pennsylvania and none are reported from the portions of western New York that drain to the Upper Ohio Valley. The dates reported below, therefore, apply most directly to the northern portions of the Upper Ohio Valley in Pennsylvania.

Several radiocarbon dates obtained from Middle Woodland sites in Warren County, Pennsylvania, offer possible clues to the dates for similar forms in northwestern Pennsylvania. Excavations conducted at the multicomponent Rieder site (36 WA 103) in 1974 provided the important radiocarbon dates and established a near terminal date for the assemblage. This date came from Feature 11, a storage pit that

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2: Raccoon Lanceolate knife; u. Type 3: Raccoon Pentagonal knife; v. Type 4: Raccoon Corner Removed knife; w. Type 1: Raccoon Ovoid Base drill; y. Type 2: Raccoon Rectangular Base drill; z. Type 3: Raccoon Side Notched Base drill; aa. Type 4: Raccoon Triangular Base drill; bb. Type 1: Raccoon Corner Notched scraper with spur; cc. Type 1: Raccoon Side Notched strike-a-light; dd. Fractured bowl from steatite, straight-base platform pipe; f, l, r, x. Levanna points.

was later utilized as a refuse pit. Stratum III of the unit contained only triangular points and associated ceramics were aligned with a culture designated the Mead Island Culture. When carbon samples were submitted to Gakushuin University, Faculty of Science, Tokyo, Japan, Stratum III was dated at A.D. 1020 ± 70 years (GAK 5351). This could represent the terminal date for the assemblage since Stratum III lacks any Raccoon forms. Directly beneath, Stratum II contained a cremation burial with a Raccoon Notched point, a pentagonal knife, and a copper awl dating at A.D. 830 ± 75 years (GAK 5354). The lowest level, Stratum I, was sealed beneath and yielded dates of A.D. 390 ± 80 years (GAK 5355) and A.D. 500 ± 80 years (GAK 5353) (Lantz, 1982: 42). The lithic sample from Stratum I of Feature 11 was small and not necessarily representative of all cultural resources remaining within unexcavated portions of this site; nonetheless, Raccoon Notched materials were not present in the lowest level. Dates from Rieder bracket the Raccoon Notched Point Assemblage between A.D. 500 and A.D. 830 and terminate it by A.D. 1020. When combined with other data detailed below, the proposed date range for the Raccoon Notched Point Assemblage was established at A.D. 500 to A.D. 950.

In 1937, Mound Three (36 WA 29) of the Irvine Mound group at Buckaloons, located at the juncture of Brokenstraw Creek and the Allegheny River, was opened by Harry L. Schoff as part of his investigations of three mound sites at this location (Carpenter, 1956:89–115). Although Raccoon Notched points were recovered in quantity from sites located near the mound group, none of the distinctive tools were recovered from within the mounds (Carpenter, 1956:Plates 8, 9, 11, 16, 19). In August of 1973, CMNH excavated a five-foot test square in Mound Three and obtained a charcoal sample associated with Middle Woodland Hopewell-like materials in a deep pit. The sample was submitted to the University of Georgia Geochronology Laboratory and yielded a date of A.D. 325 ± 110 years (UGA 1642) (Lantz 1982:49).

The radiocarbon dates from Stratum III of the storage/refuse pit at Rieder and from Irvine Mound Three suggest that the Raccoon Notched Point Assemblage became an identifiable manifestation after A.D. 500; however, the tradition may have emerged much earlier in what is now New York state. Ritchie equates the Long Bay point of the early Point Peninsula, Canoe Point phase in central New York, dated at A.D. 240 ± 80 years (Y 1277) (Ritchie, 1965: 203–213), with Raccoon points. Ritchie also states that the Long Bay point was utilized into the later Point Peninsula, Kipp Island phase, and that the Long Bay point coexisted on some sites with the later Port Maitland form dated at A.D. 630 ± 100 years (Ritchie, 1971:125). The Port Maitland point is identical to varieties of Types 1 and 5 of the Raccoon Assemblage (see Figs. 3D and 10C).

Ritchie lists other similar forms and offers additional dates. The Jack's Reef Corner Notched point, although generally larger and often thicker, is very similar in morphology to the Raccoon Types 2 and 4. Ritchie reports that the Jack's Reef point was in use during the Point Peninsula 2 and 3 periods and into the early Owasco complex (Ritchie, 1971:26). The White site, a transitional site of the Hunters Home phase of the Owasco complex, was radiocarbon dated at A.D. 905 ± 200 years (M 176) (Ritchie, 1965:259, 260). Ritchie also lists the Willow Tree site in the Mohawk Valley as a probable transitional Hunters Home phase site having a radiocarbon date of A.D. 955 ± 200 years (Ritchie, 1965:260).

The Melnick site (36 ER 31) has been investigated jointly by The Carnegie and Gannon University since 1983. This location yielded a series of four radiocarbon dates to document extensive Middle Woodland components at that location and bracket approximately 300 years of prehistory. Lithic material recovered from the surface and plow zone produced items from the Raccoon Notched Point Assemblage as well as a point very similar to Ritchie's Long Bay type. Radiocarbon dates were obtained from features that survived over 40 cm of deep cultivation. Raccoon Notched points were not recovered in association with the carbon samples; however, Levanna points and variants were. One Levanna recovered in Feature 5 was dated at A.D. 525 ± 65 years (UGA 5292). Seven Levanna points, three drills, a scraper, and Jack's Reef pottery from Feature 21 were dated at A.D. 635 ± 90 years (UGA 5427). Feature 12, with a date of A.D. 690 ± 60 years, contained one Levanna point, Jack's Reef pottery, and calcined bone. Feature 10 yielded a pottery tool, calcined bone, and butternuts, and dated at A.D. 770 ± 60 years (UGA 5296). The association of Levanna points and Jack's Reef Corner Notched varieties is well documented by Ritchie (1965:243; 1971:31), who sets the date for the emergence of the Levanna point during the Kipp Island phase at around A.D. 700. This same association of triangular and Raccoon Notched points is noted in the assemblages from the Outdoor Theater, Melnick, and Buckaloons sites (see Figs. 23 to 28) and is further documented on the sites listed in Appen-

dix II. The early date for a Levanna point at Melnick is verified by a radiocarbon date of A.D. 575 ± 180 years for a Levanna point at the Lumback site, Lorain County, Ohio (Prufer and Shane, 1976:294).

Radiocarbon dates have been obtained for Late Woodland sites in northwestern Pennsylvania and the southwestern tip of New York on sites that date diagnostics of either Proto-Iroquoian or the unpublished Mead Island Culture. These sites produce only triangular points and postdate the Raccoon Notched Point Assemblage. The cited sites, radiocarbon dates, and cultural associations are summarized in Fig. 29. The Mead Island Culture type station (36 WA 111), dated at A.D. 970 ± 75 years, is located 800 m down the Allegheny River from the Rieder site. Several recent dates for the Mead Island Culture were obtained at the Penelec site (36 WA 152) located directly across the Allegheny River from Rieder. A feature at this site containing triangular points and Mead Island ceramic types was dated A.D. 840 ± 45 years (UGA 5494). This early Penelec site date is critical since it falls within ten years of the cremation burial of A.D. 830 ± 75 years at Rieder. However, parallel and overlapping dates can be expected because of variations in material culture during periods of transition and the timing overlap of the ± factors in the radiocarbon dates. The UGA 5494 sample will be cross-checked by running an additional sample in the future. Another feature at Penelec that contained triangular points, ceramics, and bone yielded an A.D. 970 ± 45 years date (UGA 9493). An A.D. 1200 ± 70 years (GAK 5363) terminal date for Mead Island was established at the Rieder site (36 WA 103).

Charcoal from the Proto-Iroquoian Cornplanter #1 village site (36 WA 83), located 24 km upriver of the Rieder and the Buckaloons sites, was radiocarbon dated at A.D. 980 ± 100 years (M 2194). A sample from the Proto-Iroquois Vanatta site (30 CA 46), located 2 km below Salamanca, New York, near Jimmersontown, dated at A.D. 940 ± 100 years (GAK 6229). Both Cornplanter #1 and Vanatta have only triangular points in their inventories. Later excavations along this section of the Allegheny River in New York and Pennsylvania yielded radiocarbon dates that range from A.D. 1090 ± 90 years (UGA 1639) to A.D. 1525 ± 55 years (UGA 1641) (Fig. 29). No Raccoon Notched point varieties were recovered from any of these locations, all of which had extensive middens and large numbers of features.

The Upper Ohio Valley study was compared to Prufer and Shane's work in northern Ohio where the Ottawa County Libben site contained thin Jack's Reef Corner Notched points, triangular points, and some crude stemmed points, all within the traits listed for the Intrusive Mound Culture as first described by Morgan (1952:93). Three dates are given for Libben: A.D. 720 ± 105 years, A.D. 865 ± 120 years, and A.D. 955 ± 110 years (Prufer and Shane, 1976:297–300).

In summary, Raccoon Notched points were not in the inventory of Stratum I of the storage/refuse pit dating A.D. 390 ± 80 years to A.D. 500 ± 80 years at Rieder; nor were they found in the Middle Woodland Hopewell-like feature at Buckaloons that dated A.D. 325 ± 110 years. The dates of A.D. 525 ± 65 years to A.D. 770 ± 60 years at Melnick are associated with triangular points; the author assumes that these dates can be applied to Raccoon Notched points found at that site. This assumption is reinforced by the presence of Jack's Reef pottery and other dates derived from New York and Ohio. The radiocarbon date of A.D. 830 ± 75 years for the Raccoon Notched material at the Rieder site is near the terminal date for their use in northwestern Pennsylvania and southwestern New York. The Mead Island Culture with triangular points exclusively has a date range from A.D. 840 ± 45 years to A.D. 1200 ± 70 years. Triangular point Allegheny Iroquois sites, extending from Warren County, Pennsylvania, northward into Cattaraugus County, New York, are dated A.D. 940 ± 100 years to A.D. 1525 ± 55 years (Fig. 29). Taken altogether, these data indicate that the Raccoon Notched Point Assemblage dates after A.D. 500 and terminates by A.D. 950 in northwestern Pennsylvania and southwestern New York. Moreover, the Levanna point completely replaces the Raccoon Notched point in these areas before A.D. 1000.

SUBSISTENCE AND SETTLEMENT, A.D. 500–950

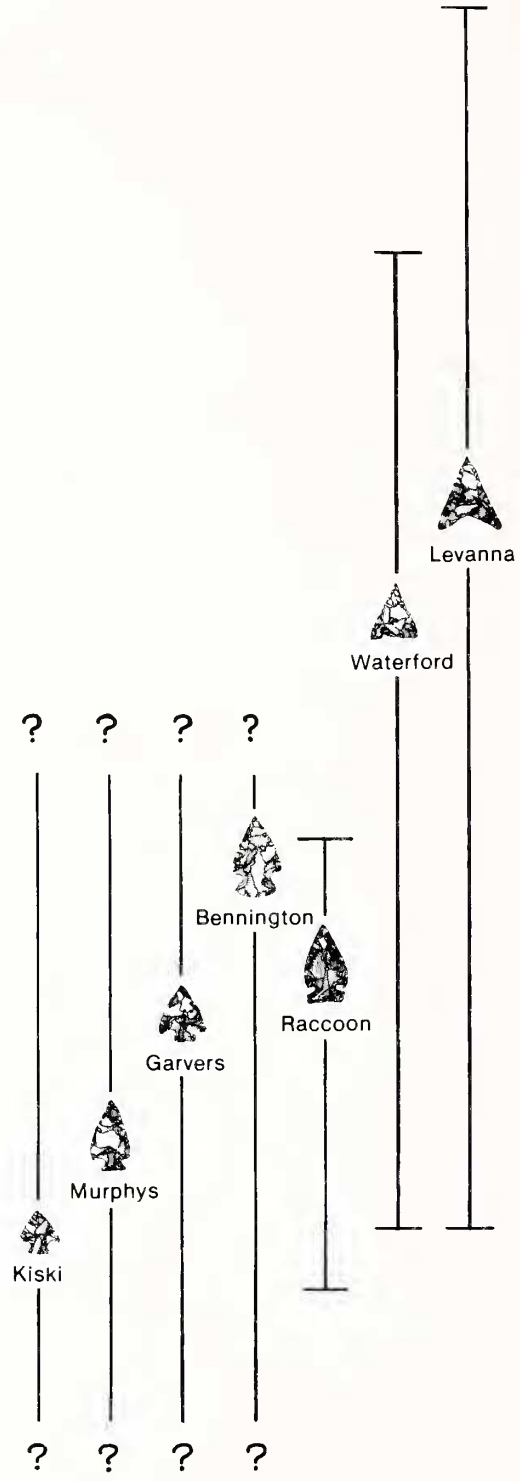
Subsistence

Many factors contributed to the abundant food resources available in the Upper Ohio Valley in western Pennsylvania and southwestern New York. Outwash from past glaciation filled valleys with glacial debris, resulting in the formation of extensive floodplain terraces (Tesmer, 1975:13; Leverett, 1934: 91–106). Before the construction of modern flood

A CHRONOLOGY OF UPPER OHIO VALLEY ALLEGHENY IROQUOIS, MEAD ISLAND, AND EARLY TO MIDDLE WOODLAND SITES.

Site No.	Site Name	Carbon 14 Date
36 WA 2	Sugar Run C.#UGA-1641	A.D. 1525 ± 55
30 CA 5	Onoville C.#M-2197	A.D. 1430 ± 100
36 WA 36	Gould C.#UGA-1640	A.D. 1340 ± 55
36 WA 84	Cornplanter 2 C.#M-2195	A.D. 1260 ± 100
36 WA 103	Rieder C.#GAK-5353	A.D. 1299 ± 70
36 CA 16	Steamburg 4 C.#UGA-1635	A.D. 1200 ± 65
36 WA 53	Kinzua C.#M-2192	A.D. 1200 ± 100
30 CA 15	Steamburg 1 C.#UGA-1634	A.D. 1145 ± 80
30 CA 35	Steamburg 2 C.#UGA-1637	A.D. 1125 ± 105
30 CA 36	Steamburg 3 C.#UGA-1639	A.D. 1090 ± 90
36 WA 103	Rieder C.#GAK-5351	A.D. 1020 ± 70
36 WA 83	Cornplanter 1 C.#M-2194	A.D. 980 ± 100
36 WA 111	Mead Island C.#GAK-5356	A.D. 970 ± 75
36 WA 152	Penelec C #UGA-9493	A.D. 970 ± 45
30 CA 46	Vanatta C.#GAK-6228	A.D. 940 ± 100
36 WA 152	Penelec C.#UGA-5494	A.D. 840 ± 45
36 WA 103	Rieder C.#GAK-5354	A.D. 830 ± 75
36 ER 31	Melnick C.#UGA-5296	A.D. 770 ± 60
36 ER 31	Melnick C.#UGA-5297	A.D. 690 ± 60
36 ER 31	Melnick C.#UGA-5427	A.D. 635 ± 90
36 ER 31	Melnick C.#UGA-5292	A.D. 525 ± 65
36 WA 103	Rieder C.#GAK-5352	A.D. 500 ± 80
36 WA 103	Rieder C.#GAK-5355	A.D. 390 ± 80
36 WA 29	Buckaloons C.#UGA-1642	A.D. 325 ± 110
36 ER 26	Wise Mound C.#UGA-5293	A.D. 160 ± 60

Point Type and Date Range



control dams, these broad valleys flooded almost annually, and the resulting overbank deposits were rich in nutrients for plant growth (Smith, 1982:16; Taylor, 1960:64–65). Streams meandered through the deposits to create oxbow lakes, abandoned channels, and occasional swampy areas (Leet and Judson, 1971:219–245). All of these environments supported a variety and abundance of floral and faunal species. The nearby forests also contributed to the subsistence base.

Ritchie's New York data (1965) and Munson et al.'s study (1971) of the Scovill site in Illinois shed some light on the probable subsistence strategies employed by Middle Woodland populations in western Pennsylvania and western New York. The Kipp Island site of the Point Peninsula 3 period was radiocarbon dated at A.D. 310 ± 100 years (Y 1378) for Kipp Island phase 2 and A.D. 630 ± 100 years (Y 1379) for Kipp Island phase 3. Ritchie (1965: 241, 242) noted that in weight, deer (*Odocoileus virginianus*) was the primary source of food; however, in total numbers, fish proved to be the most abundant with bullhead (*Ictalurus nebulosus*), channel cat (*Ictalurus punctatus*), walleyed pike (*Stizostedion vitreum*), northern pike (*Esox lucius*); bass (*Micropterus* sp.), and sucker (*Catostomus* sp.) identified. Ritchie states: "Of the 30 species of wild animals represented, 15 were aquatic. These 15 accounted for 85% of the total individual animals. Minimum number of individuals were: 56 mammals, three birds, nine turtles, six amphibians and 425 fish" (Ritchie, 1965:241). The only seeds identified from the Kipp Island excavations were carbonized goosefoot (*Chenopodium*). Ritchie theorized that horticultural products also were part of the subsistence base.

The Scovill site (Munson et al., 1971), located within the lower Spoon River valley in west central Illinois, is geographically similar to the setting of the major Middle Woodland sites of the Upper Ohio Valley. The Late Hopewellian settlement at Scovill, dated A.D. 450, demonstrates the range of floral and faunal resources available at a riverine location. The estimated food potential within a 2.87-km radius of the Scovill site is listed as follows: deer (*Odocoileus virginianus*), 103,870 kg; squirrel (*Sciurus* sp.), 24,863 kg; raccoon (*Procyon lotor*), 21,216 kg; woodchuck (*Marmota monax*), 12,376 kg; turkey (*Meleagris gallopavo*), 3,757 kg; and hickory nuts (*Carya* sp.), walnuts (*Juglans* sp.), and butternuts (*Juglans cinerea*), totaled at 864,806 hl (Munson et al., 1971:425–430). Not included in the above estimates are 27 species of fish that were recovered from pits at Scovill. The site lacked corn and beans but did produce squash (*Curcubita* sp.) and gourd (*Lagenaria* sp.). The utilization of abundant resources that were available in major river valleys has also been noted by Seeman (1979:402) and Prufer (1967*b*:316).

It is probable that the Middle Woodland populations in the Upper Ohio Valley relied heavily on the available floral and faunal resources on river terraces and in nearby catchment zones.

Settlement

Hopewell influence was extensive in the Upper Ohio Valley, especially in the upper Allegheny (Mayer-Oakes, 1955:216; Ritchie, 1965:228). Seemingly, these occupations either terminated or were culturally altered by A.D. 500. Dragoo suggested that Classic Hopewell had disappeared by that date (Dragoo, 1963:293). Review of the CMNH files and the accumulated experience of the Anthropology staff, field and regional conservation archaeologists, and collectors has made it evident that the major Hopewellian sites were utilized before and, in some cases, possibly during the emergence of the Raccoon Notched and triangular point assemblages.

Seven locations within the study area with dates that continue past A.D. 500 are especially notable for their content of Middle Woodland material; all occupy extensive terraces of up to 80 ha with large adjacent catchment zones. These are (1) Zawatski Terrace and (2) Hotchkiss Run on the Allegheny River, in Cattaraugus County, New York; (3) Sugar Run Flats and (4) Irvine Flats on the Allegheny River, in Warren County; (5) French Creek Flats in Erie County; (6) Edinburg and West Pittsburgh Terraces on the Mahoning River in Lawrence County; and (7) Raccoon Creek Terrace, Beaver County, all in Pennsylvania (Fig. 1). These locations evidence heavy concentrations of the Raccoon Notched Point Assemblage, some produce the Raccoon materials in association with triangular points, and several also have diagnostics of the Ohio Hopewell, includ-

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Fig. 29.—Chronology of point types at Allegheny Iroquois, Mead Island, and Early to Middle Woodland sites in western Pennsylvania and western New York.

ing burial mounds. These seven locations are designated as Regional Centers.

Many of the 236 sites recorded on Fig. 1 are clustered around the designated Middle Woodland Regional Centers. While many of these sites are believed to have been involved in a village removal pattern, most of the recorded associated sites were probably satellite camps utilized for hunting and gathering and for the procurement of raw materials. Undoubtedly rockshelters played an important role in the total settlement pattern, and it is unfortunate that the highly variable nature of recorded site data from these important locations prevents the inclusion of rockshelter information in this study. The clustering of sites at the Regional Center locations is obvious in Fig. 1; in all seven cases, the central locus produced evidence of intense utilization during the Middle Woodland period.

Figure 1 shows additional concentrations of Middle Woodland sites in southwestern Pennsylvania, but these are outside of the study area and, therefore, are not detailed in this publication. A notable occupation on the Ohio River in Hancock County, West Virginia, at the Watson site (46 HK 34) where extensive Early to Middle Woodland occupations and a series of mounds are documented, certainly qualifies as a Regional Center but it also is outside of the study area.

The large Regional Center terraces in northwestern Pennsylvania and western New York were not totally occupied at any given time; however, a settlement system of village movement was taking place throughout Middle Woodland times, from 100 B.C. to A.D. 900. Each village was used for a period of time before exhaustion of firewood, rotting of house structures, flooding, and—to a lesser extent—soil depletion, necessitated a move to a new location, to a valley terrace several miles distant. Eventually each village returned to its original location or an adjacent one. This same village removal pattern continued in Late Woodland times as exemplified by the Allegheny Iroquois (Dragoo and Lantz, 1975:82). The village return pattern resulted in quantities of occupational debris being scattered over an expansive area—up to 9 sq ha at the Melnick sites (36 ER 31 and C-36 ER 181), where Middle Woodland occupations date between A.D. 500 and A.D. 800.

An excellent example of continued reoccupation is found at the Irvine Flats on the Allegheny River below Warren, Pennsylvania. Raccoon Notched and triangular points can be found on nine recorded sites on that 101.2 ha terrace and two large areas have concentrations of these assemblages; however, six others show extensive Hopewellian-like occupations, including nine burial mounds on or near the flat (Lantz, 1982:40; Lantz et al., 1982:48, 49). Some of these mounds were reported and described by Carpenter (1956:89–112).

A brief review of specific geographic areas within river valleys where major Regional Centers appear to have been associated with ancillary sites follows.

Zawatski Terrace

During a 1976 survey, limited test excavations and controlled surface collections were conducted at 27 archaeological sites located on the extensive Zawatski Terrace on the Allegheny River at the confluence of Great Valley Creek near Killbuck, Cattaraugus County, New York (Figs. 1 and 30). Artifacts recovered from the extensive work at Zawatski Terrace are curated at the Division of Anthropology, CMNH. Three sites, C-30 CA 70, C-30 CA 74, and C-30 CA 93, with Late Point Peninsula ceramics are believed to represent the terminal period of the Raccoon Notched/triangular point association, dating from circa A.D. 800 to A.D. 950 (Dragoo et al., 1976).

The most recent village of the Zawatski group may have been relocated several miles downriver below Salamanca, New York, on what is called Hoags Flats. At Hoags Flats, the Vanatta site (C-30 CA 46) was excavated in 1972 (Lantz, 1974:83–86) and contained ceramics similar to Wickham Punctate and the Princess Point complex of southwestern Ontario (Ritchie and MacNeish, 1949:105; Stothers, 1976: 151) and triangular points exclusively. Vanatta was dated at A.D. 940 ± 100 years (GAK 6229). Another Hoags Flats location with triangular points and Wickham Punctate pottery was excavated in 1969 by Liddell and Henke of the State University of New York at Buffalo. This site was thought to date around A.D. 1000 (Liddell and Henke, 1969:18). The settlement pattern of village relocation evidently continued with a reoccupation of a large area of the Zawatski Terrace. Sites C-30 CA 71 and C-30 CA 72 were Late Woodland sites containing triangular points and Allegheny Iroquois varieties of exterior cordmarked rims and sherds.

That the Zawatski Terrace was important during early Middle Woodland times is supported by the presence of the Killbuck Mound (C-30 CA 73) and other sites that produce Middle Woodland materials. Sites located near the mound, C-30 CA 75 and C-30 CA 76, produced a Snyders point of an un-

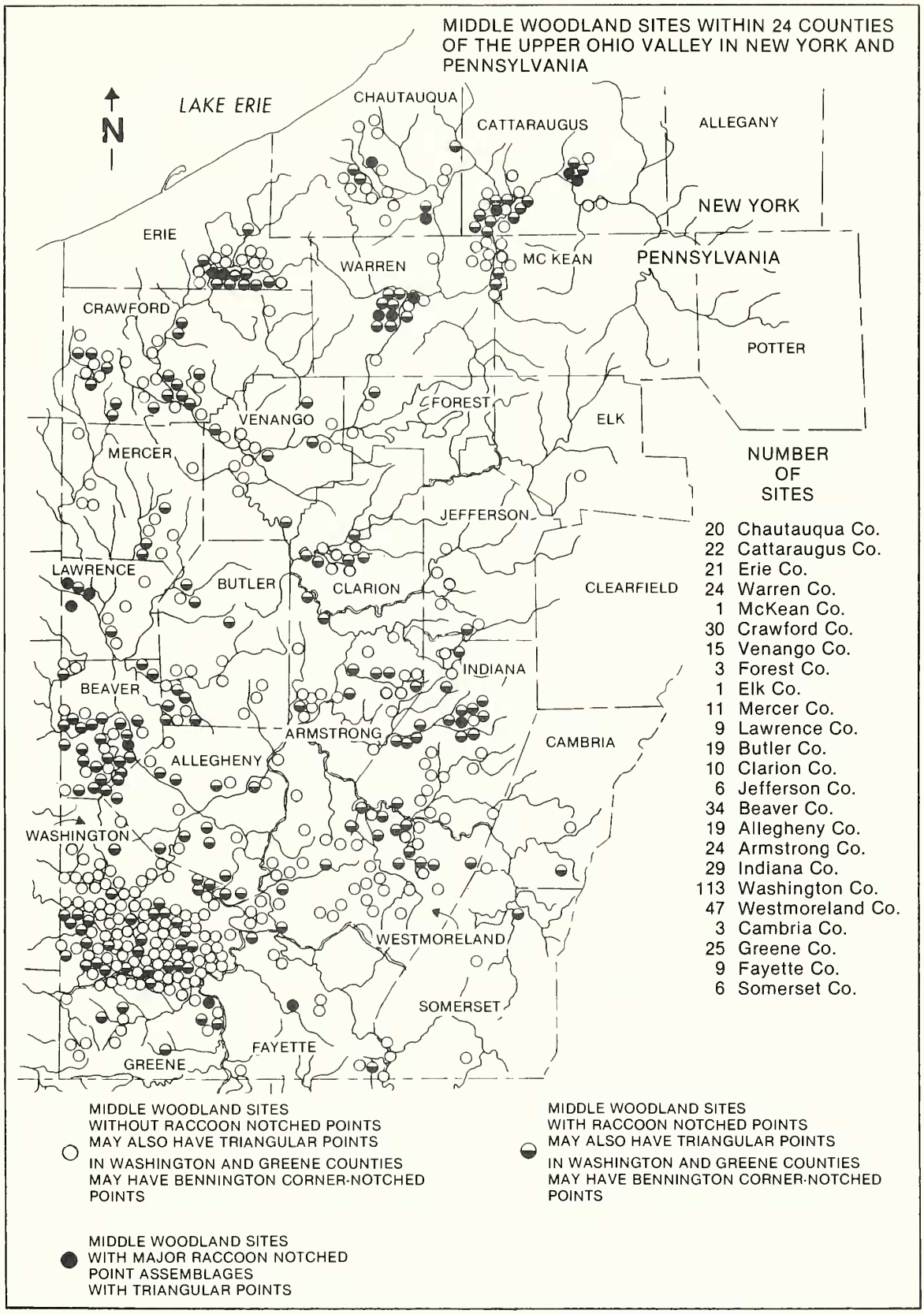

Fig. 30.—Distribution of Middle Woodland sites with Raccoon Notched and triangular points.

known exotic gray flint, Middle Woodland cache blades of Onondaga chert, and artifacts made from Ohio chalcedony. The Killbuck Mound may have been first excavated by Melvin Fillmore in 1893 and again by King Tanty Jimerson in 1920 (Carpenter, 1950:247–249). An outstanding curved-base monitor pipe, reported as being from a mound at Killbuck, is classic for Hopewell (Hart, 1975:18, 19). The Killbuck Mound was re-excavated by Carpenter in 1949 when cache blades, gorgets, copper artifacts, and a point were recovered. Parker and Carpenter reported six more mounds near Vandalia, New York, upriver from the Zawatski Terrace (Parker, 1920: 498–500; Carpenter, 1950:249–255). Ritchie (1965: 213–215) refers to the Killbuck and Vandalia mounds as being within the Squawkie Hill phase, a northeastern Hopewellian cultural expression.

Little survey or testing has been done along the major terraces upriver of Killbuck and it is possible that a number of major, but yet unrecorded, Middle Woodland sites may be located there. The recorded information at hand indicates that a number of related Middle Woodland sites are clustered around the Zawatski Terrace.

Hotchkiss Run

The Hotchkiss Run site (C-36 CA 25) is another Cattaraugus County, New York, site which may have served as a Regional Center. This extensive site, now destroyed by the construction of the Allegheny Reservoir and erosion following the completion of the reservoir, was located on the Allegheny River 1.9 km above the Pennsylvania/New York state line. As illustrated in Figs. 1 and 30, a cluster of Middle Woodland Raccoon Notched point sites surround the location. Hotchkiss Run is estimated to date during the Kipp Island phase 3 of Point Peninsula (Ritchie, 1965:228; Ritchie and Funk, 1973:155). All Raccoon Notched and triangular points from this location are manufactured from varieties of Onondaga chert. Included in surface collections are flake knives and projectile points of Flint Ridge chalcedony. An unusually large triangular tool from Hotchkiss Run is shown in Fig. 31k (Dragoo and Lantz, 1969:45–49).

Near Hotchkiss Run, along the Allegheny River, were several sites that collectively span the full range of Middle Woodland. These sites, all of which had burial mounds in association, included Cold Spring I and II (C-30 CA 12, C-30 CA 10) (Parker, 1920: 498; Lantz, 1971:13–15), Sawmill Run (C-30 CA 30), Sawmill Run South (C-30 CA 100), and the Mound site (C-30 CA 67) (Parker, 1920:498). Included in the surface collections from these sites are flake knives and projectile points of Flint Ridge chalcedony and Raccoon Notched points. The materials from these sites, as well as from the Hotchkiss Run site, were documented in the collections of Lyn Beach, Robert Orth, William Stuart, John and Jim Zavinski and others.

Sugar Run Flats

Another important complex of Middle Woodland sites was located 19 km above Warren, Pennsylvania, on the Allegheny River and, like the Hotchkiss Run location, is now inundated by the Allegheny Reservoir. Sites affiliated with the Sugar Run Flats are shown in Figs. 1 and 30. Seven kilometers upriver, Carpenter reported five mounds on the Cornplanter Grant (Carpenter, 1950:241–243). Ritchie (1965:214) referred to this section of the Allegheny River as a regional center of Hopewellian traits.

The sites with strong Hopewellian traits extend from the Berkabile #1 site (36 WA 15) north to the Langler Mound (36 WA 24), a distance of several kilometers. Other than a mention in Carpenter's notes (CMNH files) of a mound being in the area, and the discovery of a mound base and a mass of red ochre by Lantz in 1960, there is no information available for Langler Mound. Central to this extensive river terrace were the famous Sugar Run Mounds and village (36 WA 2). The mounds were excavated by Carpenter and Wesley L. Bliss in 1941, and a section of the village north of the mound was investigated by Shirley Bliss under the supervision of her husband (Carpenter, 1950:184–240). A more-northern section of the village area was excavated during 1964–1965 by the Kinzua Chapter No. 18 of the Society for Pennsylvania Archaeology. Afterwards this material was photographed and some of the artifacts were donated to CMNH.

The Sugar Run village produced a quantity of Middle Woodland flake knives and Chesser Notched points of Flint Ridge chalcedony, Raccoon Notched points, and several flakes of obsidian. The mounds produced eight gorgets, fifty-one chert and three jasper cache blades, one chert knife and one chalcedony flake knife, four fragments of sheet muscovite, one oval piece of sheet mica, one galena crystal, one copper awl, one piece of sheet copper, three chert projectile points, three bear canines, one turtle carapace, one deer antler, Illinois Hopewell-like dec-

orative pottery, red and yellow ochre, and other items (Carpenter, 1950:189–203).

A bulldozer cut was made 152 m north of Sugar Run in 1965, exposing several pits that were recorded as site 36 WA 133. Several flake knives of chalcedony were recovered in association with some unusually hard, untyped, Middle Woodland pottery. The vessels were fairly large with expanded flat lips, fine smoothed-over cord exteriors with horizontal fabric impressions on the interior of one, and random cording on the interior of another (Lantz, 1971: 12).

The nearby Berkabile site (36 WA 15) also contained a Middle Woodland component. Flake knives and points of Flint Ridge chalcedony and gorget fragments are in the CMNH collections. A small mound that had been plowed down by 1961 was reported by Mr. Fuller of Kinzua, Pennsylvania, as being east of PA Route 59 on the edge of an old overflow channel on Berkabile property. In the Fuller collection were several Flint ridge blades reported as having been found there and stone slabs and several flake knives were found at the location. Mr. Berkabile believed that the stone used in the construction of his tool shed had come from the field and, based on the accumulated evidence, the location was recorded as the Berkabile Mound (C-36 WA 235).

During the Dragoo and Ritchie Allegheny Reservoir survey in 1958 the following Middle Woodland sites were recorded within several kilometers of the Sugar Run Mounds: 36 WA 7, 10, 12–15, 17, 19–21, and 24. Another recently recorded mound, C-36 WA 231, was first reported in 1965 during construction of the Kinzua Beach Park. Workmen reported finding large blades, a gorget, and a pipe. Erosion has recently exposed additional Flint Ridge flake knives and cache blades that are now in the John Zavinski collection.

In October of 1986, a slab rock burial mound (C-36 MC 14) was discovered by Zavinski and the author in McKean County during a survey of Nelse Run. Nelse Run enters Sugar Run 1.2 km east of the Sugar Run Mound. This newly discovered mound, also under the summer pool of the reservoir, was exposed by erosion. Other than calcined bone and flint flakes recovered in the mud, no artifacts remained and a large capstone had been removed by persons unknown.

Ritchie established the Squawkie Hill phase of Middle Woodland, a manifestation comprised of the possible merging of local cultures and that of the intrusive Hopewell; in western Pennsylvania he includes the Sugar Run mounds and mounds downriver at Irvine as components of the Squawkie Hill phase (Ritchie, 1965:214, 215).

Irvine Flats (Buckaloons)

Irvine Flats is a significant 101.2 ha terrace located on the Allegheny River adjacent to the mouth of Brokenstraw Creek 8.5 km below Warren, Pennsylvania (Figs. 1 and 30). The major Middle Woodland occupation has many Hopewellian attributes. Artifacts of exotic lithics and distinctive imported items have been recorded in quantity from the Buckaloons sites. Projectile point types included Manker Stemmed, Manker Corner Notched, Chesser Notched, and Snyders points manufactured from Flint Ridge, Plum Run, and Coshocton, Ohio, lithics. Occasionally Onondaga cherts from Pennsylvania glacial outwashes were utilized. Of the ten recorded Middle Woodland sites on the Irvine Flats (Fig. 1), Raccoon Notched Point Assemblage materials have been recovered from nine: 36 WA 29, 31, 93, 95, 96, 97, 98, 99, and 102. The various point and tool types from these locations are illustrated in Figs. 3 through 22 and are listed in Appendix I. Representative points and tools from the Raccoon Notched Point Assemblage from 36 WA 99 are shown on Fig. 27 and listed in Appendix II. Ceramics from 36 WA 29 and 99 are illustrated on Fig. 28.

Hopewellian-like materials are concentrated on sites 36 WA 29, 30, 31, 95, 96, 97, and 98. The collections at CMNH from these sites include Chesser, Manker, and Snyder points; prismatic flake knives; Middle Woodland ceramics; and various tools. Deep cultivation of 36 WA 97 in 1978 exposed a small feature containing ceramics, a Flint Ridge cache blade (Fig. 32b), and a waste flake of chalcedony. A ceramic rim sherd, quartz and sandstone-tempered with oblique dentate stamping (Fig. 32a), was also recovered. The rim is similar to pottery from the Donaldson site of the Saugeen focus of Ontario (Wright and Anderson, 1963:49, Plate 13) and appears to be related to the Early Point Peninsula Culture of New York (Ritchie, 1965:205) and Vinette Dentate ceramics (Ritchie and MacNeish, 1949:101).

Affiliated with the Irvine Flats Regional Center are several of the Harrington Farm sites, located across the Allegheny River. In 1972, a small section of the Herrington Farm #2 site (36 WA 87) was salvaged and a large pit was exposed. It contained

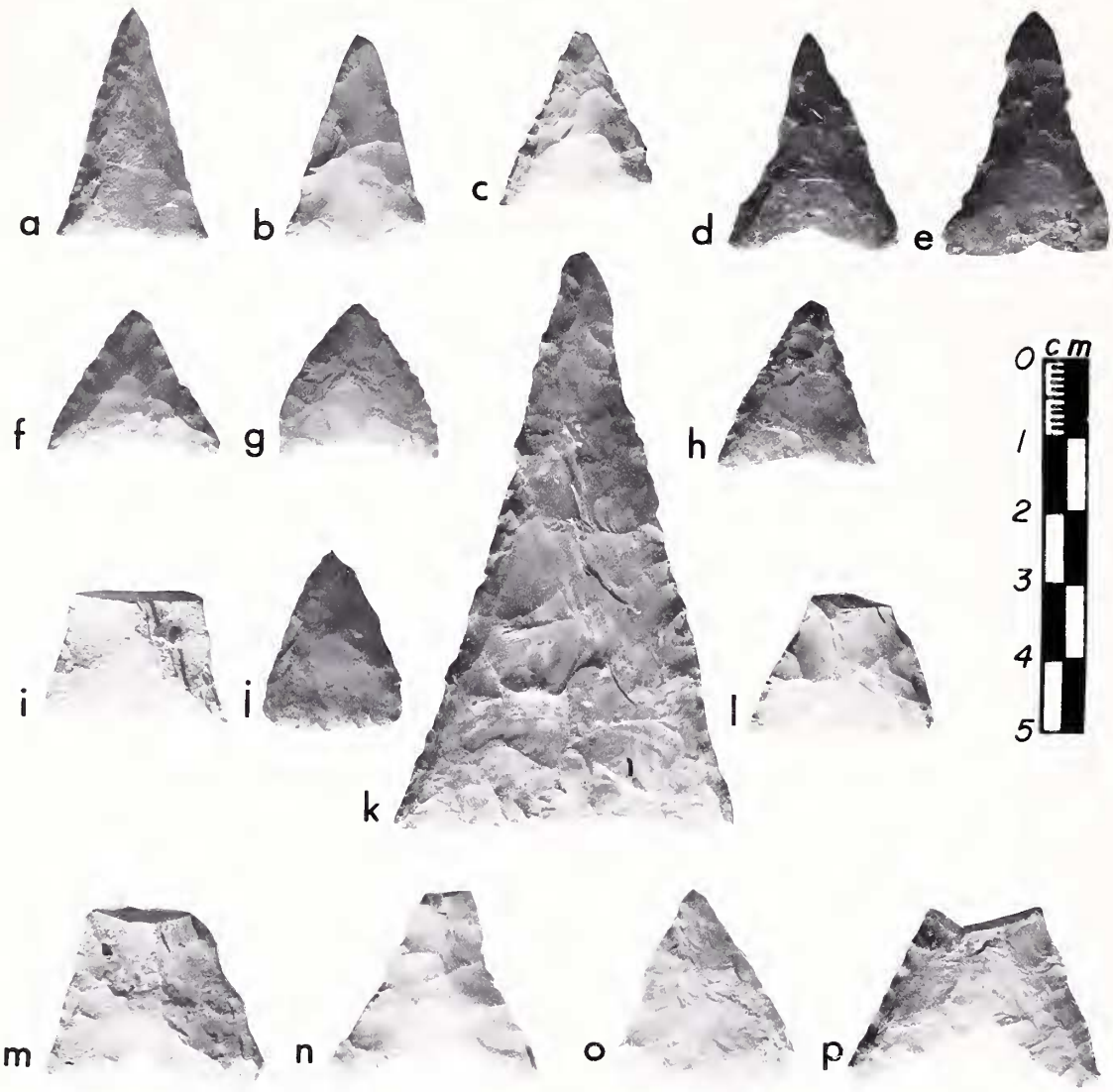

Fig. 31.—Levanna and Waterford triangular points from the Melnick site, 36 ER 31; large triangle from the Hotchkiss Run site, 30 CA 25. a. Waterford, Onondaga, 36 ER 31; b. Levanna, Delaware, 36 ER 31; c. Levanna, Delaware, 36 ER 31; d. Levanna, Onondaga, 36 ER 31; e. Waterford, Onondaga, 36 ER 31; f. Levanna, Onondaga, 36 ER 31; g. Levanna, Onondaga, 36 ER 31; h. Levanna, Onondaga, 36 ER 31; i. Waterford, Delaware, 36 ER 31; j. Levanna, Onondaga, 36 ER 31; k. Levanna, Onondaga, 30 CA 25; l. Waterford, Delaware, 36 ER 31; m. Waterford, Delaware, 36 ER 31; n. Levanna, Delaware, 36 ER 31; o. Levanna, Delaware, 36 ER 31; p. Levanna, Delaware, 36 ER 31.

flake knives, scrapers, a Steuben point, a point base that is possibly from a Snyders point, and Hopewell ceramics. In Fig. 33e, the large broken blade is manufactured from Coshocton, Ohio Upper Mercer flint as is the spurred scraper (f). The Steuben point (g) is Onondaga chert whereas the possible Snyders point base (h) is manufactured from Flint Ridge chalcedony. The ceramics include one rim sherd (Fig. 33a) that is most similar to Point Peninsula Plain (Ritchie and MacNeish, 1949:103). The feature also contained dentate stamped rim and neck sherds with a herringbone design (Fig. 33c, d) most similar to Central Illinois Valley Hopewell (Wray, 1952: Figs. 73, 74). There are resemblances to ceramics from the Middle Woodland Winooski site near Lake Champlain in northwestern Vermont (Petersen and Power, 1983:119, 160) and the Pseudo Scallop Shell rims from the Donaldson site in Ontario (Wright and Anderson, 1963:Plate XI, 6). Another rim (Fig. 33b) has some resemblance to Tittabassee Ware vessels from the Schultz site, Saginaw County, Michigan, that was radiocarbon dated between A.D. 1 and

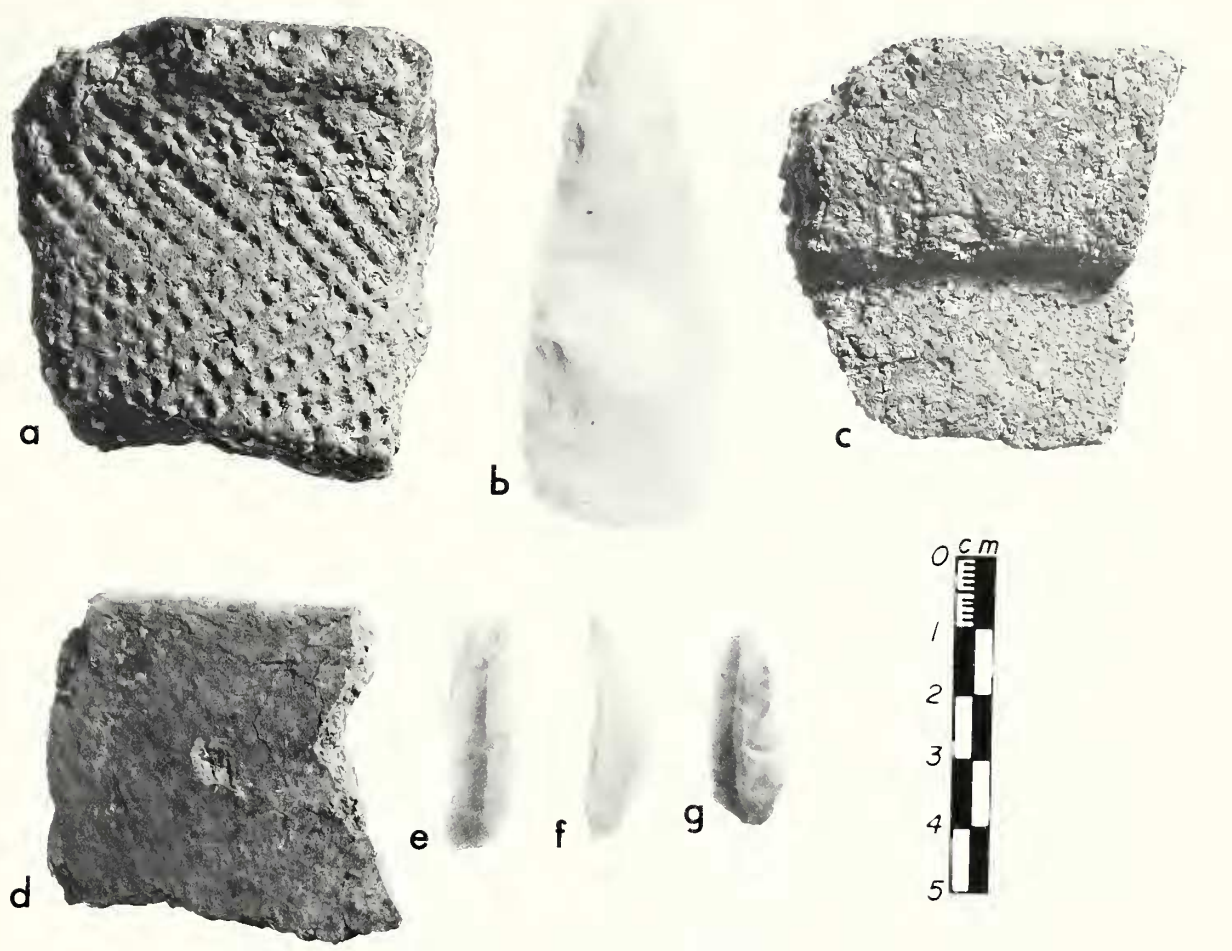

Fig. 32.—Middle Woodland artifacts from the contents of two features at Buckaloons sites 36 WA 29 and 36 WA 97. a. Dentate stamped rim sherd, herringbone pattern, quartz and sandstone temper, 36 WA 97; b. Triangular biface, Flint Ridge chalcedony, 36 WA 97; c. Plain-collared rim, quartz and sandstone temper, 36 WA 29; d. Rim, smooth exterior with horizontal corded interior and flat lip, quartz and sandstone temper from 36 WA 29 found in association with c, e, f, and g; e–g. Prismatic flake knives, Flint Ridge chalcedony, 36 WA 29.

A.D. 300 (Fitting, 1972:153–155, 257). The Harrington specimen is unusual, with spaced vertical stamping that suddenly closes to form triangles. The lip also has oblique dentate stamping while the sub-lip appears to have been rocker-stamped.

Under an agreement with the National Forge Company, CMNH had exclusive access for surface collecting at Irvine Flats (Buckaloons) for a period of five years. This arrangement with National Forge resulted in the procurement of provenienced artifacts and extensive collections of materials. During this time, 17,000 artifacts were amassed by CMNH regional conservation archaeologists William Stuart and John Zavinski. A small private grant from Stuart enabled CMNH to conduct some test excavations and obtain a radiocarbon date of A.D. 325 ± 110 years (UGA 1642) for Mound Three of the Irvine group (Lantz, 1982:40).

Numerous exotic prismatic flake knives, fragments of sheet mica, and recently an unusual mica gorget have been collected from plowed fields near the mounds. The Stuart and Zavinski collections contain 26 complete and fragmentary prismatic chalcedony knives from the area around Mound One.

Mounds One and Two were first explored by Roscoe D. Ransom in 1885. These mounds, as well as Mounds Three and Five, were investigated in 1937 by Harry J. Schoff. With the exception of Mounds Three and Five, the reopened mounds contained

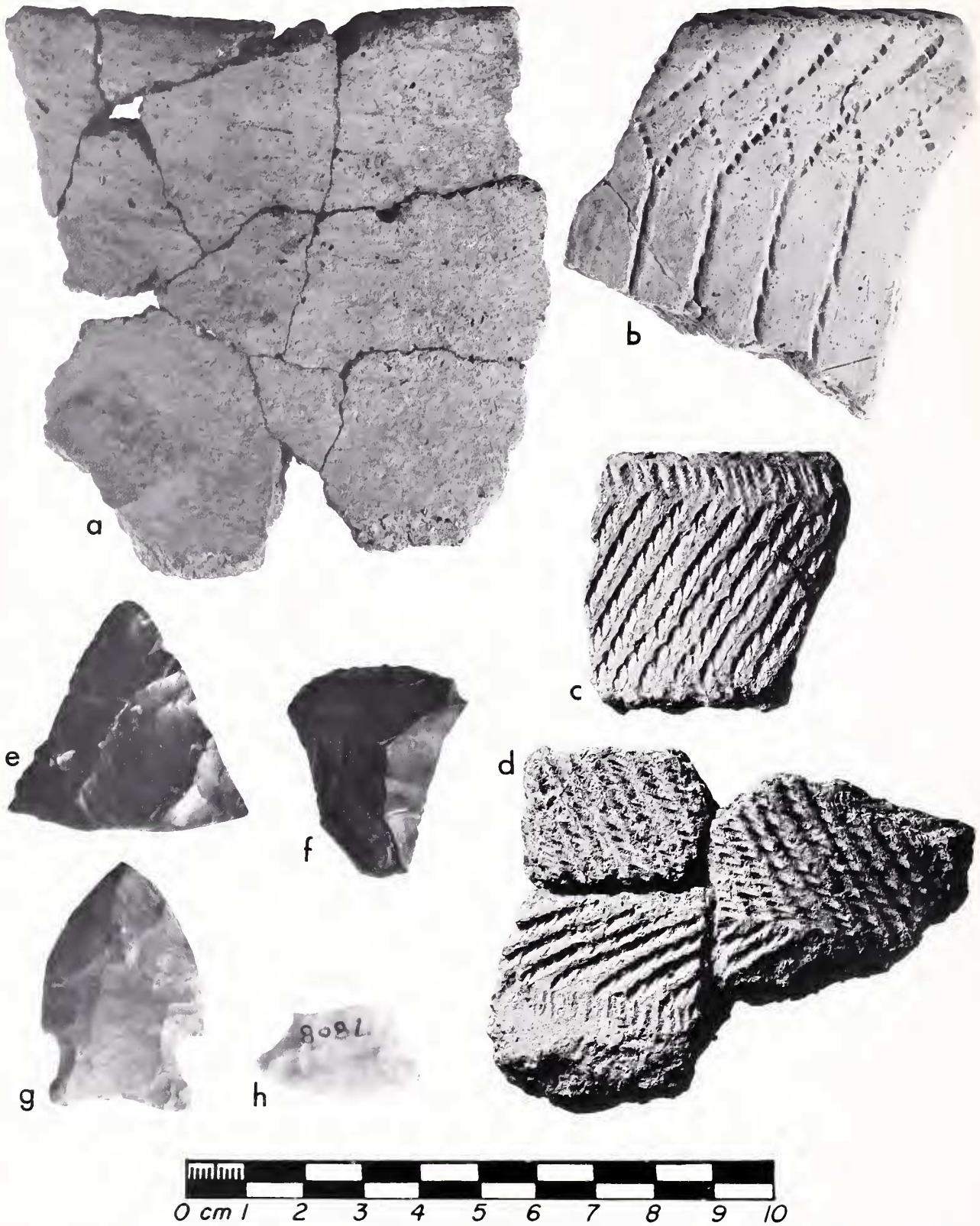

Fig. 33.—Middle Woodland artifacts from a feature at the Harrington Farm, 36 WA 87. a. Point Peninsula Plain rim sherd; b. Rim sherd, similar to Tittabassee Ware vessels from the Shultz site, Saginaw County, Michigan; c, d. Rim and neck sherds from one vessel,

exotic materials including native silver, sheet copper, a clay platform pipe, and a stone hemisphere (Carpenter, 1956:151–183). In 1973, CMNH excavated a test square in Mound Three (36 WA 29) and encountered a feature that contained three chalcedony flake knives (Fig. 32e, f, g), sheet mica, red ochre fragments, chalcedony and Onondaga chert flakes, miscellaneous lithic materials, and 44 grit-tempered sherds and rims. Three types of pottery were present: sherds with smooth exteriors and horizontally corded interiors, sherds with corded exteriors and smooth interiors, and sherds with smooth exteriors and interiors. Rim sherds from the sample generally have flat lips with smoothed exteriors and horizontally corded interiors (Fig. 32d). One sherd with a rounded lip, flat collar, smooth exterior, and a horizontally corded interior was also recovered (Fig. 32c). The plain-collared ware was previously unknown for western Pennsylvania. Its counterpart is in the Adena to the southwest in Ohio, Kentucky, and southeastern Indiana (Morgan, 1952:86, Fig. 31A). However, at Buckaloons, Adena blades were neither associated in the feature nor recovered from the plowed fields in the immediate area of the mound. The uncollared ware from the excavated feature near Mound Three was comparable to the rim sherds excavated from Mound One by Schoff (Carpenter, 1956:107).

Sites at the Irvine Flats have been occupied intermittently since Paleo Indian times. An assessment of the collected cultural material suggests that occupation there covered the span of Middle Woodland. Analysis of the lithics shows a separation of flint types utilized during Middle Woodland Hopewell—or prior to A.D. 500—and those used by groups producing the Raccoon Notched Point Assemblage after A.D. 500. The Hopewell inventory is comprised of 755 items of Flint Ridge chalcedony, 30 Coshocton, 9 Plum Run, 6 Skyhill, and 258 from Onondaga chert. Ohio lithic sources accounted for 75% of the total. In contrast, the Raccoon Notched Point Assemblage inventory lists 215 items of local Onondaga cherts and just five items produced of Coshocton, Ohio, flint or only 2.3%. This shift in lithic procurement is also evidenced at the Melnick site (36 ER 31) where the Raccoon materials have only 2% Ohio-sourced lithics. Thus, at two of the Regional Centers, Irvine Flats and French Creek, almost all movement of Ohio lithic sources ceases around A.D. 500.

French Creek Flats

Middle Woodland Melnick sites 36 ER 31 and 36 ER 181 are the nuclei of the Regional Center on the French Creek Flats. They are located several kilometers southeast of Waterford, Pennsylvania, within a meander on the South Branch of French Creek. Radiocarbon dates at 36 ER 31 range from A.D. 525 ± 65 years (UGA 5292) to A.D. 770 ± 60 years (UGA 5297). Eleven smaller sites in the immediate area produce Raccoon Notched and triangular points; three others are related through the presence of portions of the Raccoon Notched Assemblage. Sites containing Raccoon Notched Assemblage materials are: 36 ER 19, 22, 24, 30, 33, 36, 182, 185, 186, 187, 195, 198, 203, and 207 (Figs. 1 and 30).

The 1/10 sq ha occupation on Melnick property was recorded by Neal Clark and the author in 1952. At that time the western half of 36 ER 31 was owned by Alden May and was in second-growth timber. In 1955 several test squares were excavated into the black silty soil on the May property by members of Erie Chapter No. 6 of the Society for Pennsylvania Archaeology. Recovered were Raccoon Side and Corner Notched points along with Levanna triangles. Corded, grit-tempered body sherds and several fragmentary rim sherds, apparently of Jack's Reef corded types, were found in a midden that had been partly disturbed by floodwaters from French Creek.

The Alden May property was eventually sold to Lee Port, who cleared and cultivated the western portion of the site in the 1970s. As the plow intersected village pits, a sizeable sample of pottery was recovered by Arnold Bailey of Meadville, Pennsylvania (Fig. 26f–k).

In 1983, Gannon University and CMNH initiated a joint, three-year research program in the valley of the South Branch of French Creek, utilizing the expertise of CMNH and students in a field school program, to seek answers to research problems in northwestern Pennsylvania. Efforts concentrated on the Melnick property and on land to the east, owned by

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similar to the Hopewell pottery of the Central Illinois Valley, with dentate stamping in a herringbone pattern; e. Large tip of a blade made of Coshocton, Ohio, Upper Mercer flint; f. Spurred end scraper, Coshocton, Ohio, Upper Mercer flint; g. Steuben point, Onondaga chert; h. Possible Snyders point base, Flint Ridge, Ohio, Vanport flint.

Richard Kingen. This cooperative effort resulted in the excavation of over 1,200 sq m at this important location. In addition to these excavations, related survey work recorded 19 adjacent sites, some of which were subjected to testing and/or sufficient fieldwork to document the prehistoric affiliations.

The Melnick #1 site produced nearly 7,000 diagnostic items, including 21 Raccoon Notched and 81 triangular points. A sample of representative point and tool types is shown in Fig. 25. Other stone items and ceramics are illustrated in Fig. 26: celt (a) and pendants (b, c) are similar to specimens retrieved from the Outdoor Theater site in Beaver County (36 BV 24). Study of the lithic sources indicates that of the total 4,124 items from Melnick, only 2% were manufactured from imported (Ohio) materials.

The inhabitants of the Melnick sites utilized both Raccoon Notched and triangular points but had little contact with Ohio Middle Woodland influences. Analysis of the ceramics indicates some interaction with the Regional Center at Irvine. Rim sherds of Jack's Reef Corded, Corded Collar, and Kipp Island Crisscross occur at both centers (Fig. 28b–f, Fig. 26f, g, i, j). Fig. 26h, k illustrate the internal rocker-stamping and coil or section breaks.

House patterns did not survive the deep cultivation at Melnick; however, four deep features produced radiocarbon dates. No Raccoon Notched materials were recovered from dated features; nonetheless, with a ratio of four triangular points to each Raccoon Notched form, this was not unexpected. One Levanna point from Feature 5 dated A.D. 525 ± 65 years (UGA 5292). Feature 21 contained seven Levanna points, three drills, a scraper, and fragments of Jack's Reef pottery and dated A.D. 635 ± 60 years (UGA 5427). Feature 12, dated A.D. 690 ± 60 years (UGA 5297), contained a Levanna point, Jack's Reef pottery, and calcined bone. Feature 10 contained a potter's tool, calcined bone, and butternuts (*Juglans cinerea*) and dated A.D. 770 ± 50 years (UGA 5296). Melnick #1 dates suggest that this site postdates the Middle Woodland period of influence in the French Creek Valley and that the Hopewellian dominance there terminated around A.D. 500.

The recorded Wise Mound location is about 1 km from the Regional Center Melnick sites but was destroyed by unknown excavators prior to the Gannon/CMNH study. An undisturbed hearth that had been protected by a large stump yielded a date of A.D. 160 ± 10 years (UGA 5293) and contained Flint Ridge and Onondaga flakes, some red ochre smears, and no diagnostic material. Other nearby mound recordings include Indian Head (36 ER 28) near Lebouf Creek and Mystic (C-36 ER 220) on French Creek. Sites on the Dollar farm on Stone Quarry Road (C-36 ER 195 and C-36 ER 196) produce Flint Ridge points, cache blades, gorgets, and flake knives, as evidenced by collections held by Frank Swartz of Erie. Similar materials are reported from the Lewis Farm (36 ER 33) and the now destroyed Lebouf Beach site, 36 ER 16.

Another nearby mound and village may be more closely related to the Regional Center at the French Creek Flats and perhaps participated in the Hopewell Interaction Sphere described for the Ohio area by Seeman (1979:240–248). The Danner Mound (36 CW 4) was excavated by the author and Neal Clark in 1959. Located on Oil Creek, a tributary of the Allegheny River located 15 km southeast of the French Creek Flats, this mound contained two copper crescent gorgets, copper beads, chalcedony flake knives, a large leaf-shaped blade of Coshocton flint (18 cm in length), a cache blade, a two-hole gorget, a Snyders point, and other items (Clark et al., 1960: 37–45).

Edinburg and West Pittsburgh Terraces

A cluster of Middle Woodland sites and several mounds along the Mahoning River within the Beaver drainage were of early interest to archaeologists. Several articles about the small, earthen burial mounds were published by Taylor (1878:306) and Miller (1878:168) in the *Annual Report of the Board of Regents of the Smithsonian Institution* and reported by Mayer-Oakes (1955:81). Mayer-Oakes recognized the presence of grit-tempered Mahoning ware pottery and the distinctive Raccoon Notched point type at these sites.

There are four Lawrence County sites that have produced the Raccoon Notched points in quantity: West Pittsburgh (36 LR 1) and Morrow (36 LR 5), located on the Beaver River below the town of West Pittsburgh, and the Howard Chambers (36 LR 3) and Bolinger (36 LR 21) sites on extensive terraces adjacent to the Mahoning River near Edinburg, Pennsylvania (Mayer-Oakes, 1955:81–84).

During the 1960s a series of features were exposed by deep cultivation at the Howard Chambers site. These features, excavated by Richard Gartley, contained a sizeable sample of Mahoning Cordmarked pottery in association with Raccoon Notched and triangular points (Johnson, 1976:62; John Zakucia, personal communication, 1987). Neal Clark's 1959 surface collection from this location includes Rac-

coon Notched, triangular points, bladelets of chalcedony, and several hematite celts.

A site reported by John Zakucia in 1986, the Ashton Cemetery site (C-36 LR 103) on the Mahoning River immediately northwest of Edinburg, also produced a sizeable collection of Raccoon Notched points. Taken altogether, the sites at Edinburg and West Pittsburgh appear to represent a settlement pattern of village relocation similar to that at Zawatski. The sites producing Raccoon Notched Point Assemblage materials are within 12 km of one another.

Earlier Middle Woodland Hopewellian material has been reported for the area by Mayer-Oakes at the Morrow site (36 LR 5). A stone crypt was excavated by George V. Morrow in 1880 and Mayer-Oakes believed that the recovered materials represented the remains of a small Middle Woodland mound (Mayer-Oakes, 1955:82, 84–85). A mound on the Chambers farm (36 LR 11) was excavated by John Zakucia in 1960. Associated burial artifacts included slate gorgets, Flint Ridge flake knives, stemmed points, a hematite cone, and a scraper. Mica, crude cache blades, Flint Ridge flake knives, and other items were found in the mound fill. Zakucia believed the mound shared Adena and Hopewell traits and saw similiarities to the Sugar Run and Irvine Mounds of the Allegheny Valley and others in New York (Zakucia, 1961:14).

The West Pittsburgh site is now completely devastated and it is assumed that additional sites that could have been part of the Edinburg-West Pittsburgh Regional Center have been destroyed by industrialization and extensive mining.

Raccoon Creek Terrace

The Outdoor Theater site (36 BV 24), the type station for the Raccoon Notched point, was a multicomponent site covering 20,000 sq m. It was located on an extensive terrace within a meander of Raccoon Creek, adjacent to and west of the town of Aliquippa in Beaver County, Pennsylvania (Figs. 1 and 30). The site was partially destroyed during the 1940s by the construction of a drive-in theater and was further damaged in 1958 with the construction of the Hopewell Township Water Pollution Control Plant. The small remaining section suffered additional damage by activities of Aliquippa Auto Recycling, Inc. (Emil Alam, personal communication, 1986). Because of these disturbances, no radiocarbon dates are available.

The Outdoor Theater site has produced the greatest concentration of Raccoon Corner Notched Assemblage materials of all the studied sites. Fourteen additional sites along Raccoon Creek and 33 locations within Beaver County also produce the distinctive tools (see Figs. 1, #30 and Appendix II). Located along Raccoon Creek and within 8 km of the Outdoor Theater site are the following sites: 36 BV 20, 23, 37, 39, 50, 59, 111, 118, 160, and 180. Alam describes the Outdoor Theater site as having concentrated occupation zones in restricted sections of the terrace (Emil Alam, personal communication, 1986).

The Raccoon Notched point type station was occupied throughout the Middle Woodland period, evidenced by the presence of Mahoning Plain pottery, cache blades, flake knives, and numerous Middle Woodland points made of Flint Ridge and Coshocton, Ohio, lithics. Points donated to CMNH by Alam include Chesser, Manker, Kiski, Murphys, Garvers, and Bennington types. The site produces all of the attributes of the hypothesized assemblage. Representative stone tools are illustrated in Fig. 23 while ceramic and stone categories are shown on Fig. 24. Pendants (Fig. 24a–c) are identical to those illustrated for the Kipp Island phase by Ritchie (1965:249).

A study of 53 Raccoon Notched points and tools from the Outdoor Theater site yielded the following breakdown of artifacts in percentages of flint types: 38% Upper Mercer flint, Coshocton County, Ohio; 38% Onondaga chert from glacial till; 21% Vanport, Flint Ridge, Ohio; 2% Plum Run, Alliance, Ohio; and 1% unidentified. The 61% total for Ohio raw materials is in marked contrast to the 2% and 2.3% totals for Ohio materials from the Melnick and Irvine sites to the north.

MIDDLE WOODLAND PHASES IN WESTERN NEW YORK AND NORTHWESTERN PENNSYLVANIA

In northwestern Pennsylvania and western New York, a cultural sequence can be projected from circa 100 B.C. to A.D. 900. Based on artifacts and settlement patterns, the region was occupied by local Middle Woodland people who participated in a cultural continuum from earlier Woodland times

(Lantz, 1982:38; Lantz et al., 1982:47). By A.D. 300, artifacts and raw materials, including some diagnostics of the Hopewell Interaction Sphere (Seeman, 1979) and possibly even Hopewell people, were moving through the Allegheny Corridor (Lantz et al., 1982; Lantz, 1984). This corridor was a migration route utilized by Paleo Indians and subsequent populations. The route is substantiated by the numbers of major Middle Woodland sites that are located along the Allegheny River from the present town of Irvine, Pennsylvania, upriver to Olean in Cattaraugus County, New York. Evidence of the movement of cultural material is also evident in the Conewango Creek drainages (Ritchie, 1965:215).

The Williams site (36 WA 1), a village and previously disturbed mound site located in Pennsylvania on Conewango Creek near the New York state line, was excavated by Alfred Guthe in 1950 (Guthe, 1951). An early date of 845 B.C. ± 300 years was obtained; however, Ritchie (1965:215) believed the date to be too early for Hopewell. More recent material from the village site in the Williams collection indicates that flake knives and Middle Woodland chalcedony points were present. During a recent disturbance of the mound, indications that the mound had been constructed over an earlier occupation zone were observed. This could have produced the early date. Johnson et al. (1979:69) confirm the earlier occupation zone at the Williams mound. The Walter Tennis collection from the Conewango Creek valley at Kiantone and Poland Center in New York also contains chalcedony flake knives and Manker and Chesser points. The Poland Center Mound in western New York, the largest recorded mound in the upper Conewango valley, also was associated with a Middle Woodland village (C-30 CH 79).

That the movement of culture was infringing on an already existing Middle Woodland base is strongly suggested by radiocarbon dates obtained from Mound Three at Irvine Flats (36 WA 29) and from dates obtained at the Rieder site (36 WA 103). While the artifacts from these two locations are not comparable, the date ranges do overlap. Rieder, with Vinette-like pottery and crude stemmed points of local Onondaga chert, yielded dates of A.D. 390 ± 80 years (GAK 5355) and A.D. 500 ± 80 (GAK 5352). In comparison, Irvine Mound Three dated A.D. 325 ± 110 (UGA 1642) for a feature containing Ohio chalcedony flake knives, sheet mica, red ochre, flakes of both chalcedony and local chert, and hard plain-collared ware (Fig. 32c–g).

While Ohio chalcedony dominates the earlier Hopewellian manifestations, by A.D. 500, all cultural ties with Ohio Hopewell seem to terminate with a possible merging of the Ohio Hopewell and local Middle Woodland cultural groups. Such a merger was described by Ritchie for the Squawkie Hill phase in New York (Ritchie, 1965:214, 215). Lithics from the Melnick site (36 ER 29), were almost exclusively of local Onondaga chert. Accordingly, the Raccoon Notched points and triangular points from the Irvine Flats Regional Center were of local Onondaga cherts, again suggesting a rapid decline of Hopewell and Ohio contacts and a subsequent shift to the total Raccoon Notched Point Assemblage after circa A.D. 500.

The Squawkie Hill Phase

Ritchie has established a progression within the Middle Woodland that addresses cultural change through time in New York (Ritchie, 1965: Fig. 1; 201–214). In central New York, Ritchie divides Middle Woodland into the Early, Middle, and Late Point Peninsula traditions while Hopewell is placed between the Early and Middle traditions of Point Peninsula. Ritchie's phases within the traditions are relevant to the research results presented here.

Ritchie's Squawkie Hill phase, based on a single date of A.D. 160 ± 100 years (Y 1276) (Ritchie, 1965:216) and within the Hopewell tradition, was established from trade (Interaction Sphere) artifacts from a mound group on Squawkie Hill adjacent to the Genessee River in western New York. Important to the understanding of Middle Woodland occupations is Ritchie's listing of the Poland Center, Killbuck, and Vandalia Mounds in New York, and Cornplanter, Sugar Run, and Irvine mounds in northwestern Pennsylvania as Squawkie Hill phase Hopewell (Ritchie, 1965:215). Ritchie stated: "In the early centuries of our era, Hopewellian traits were diffused or carried northward via the Ohio and Allegheny River into western and central New York" (Ritchie, 1965:228). Ritchie felt that the Ohio Hopewell cultural influence commenced during the latter part of Early Point Peninsula. However, after circa A.D. 500, he saw relationships between the Intrusive Mound Culture of Ohio and the Kipp Island phase of Late Point Peninsula.

Mayer-Oakes noted that Hopewellian influence was apparent in the Allegheny Valley and that the most important centers of occupation were located

above Brokenstraw Creek in Warren County, Pennsylvania (Mayer-Oakes, 1955:216). The early movement of Hopewellian traits is well documented by the quantity of cultural material present at Middle Woodland Regional Centers along the Allegheny in western Pennsylvania and southwestern New York, especially at Irvine, Sugar Run, and Killbuck. Ritchie (1965:214, 215) recognized these sites as "centers of expression or development." Collectively, they evidence many Hopewellian attributes, including some defined by Seeman as the most diagnostic of the Interaction Sphere (Seeman, 1979:304, 313). Chesser Notched, Manker, and Snyders points, flake knives of Ohio flints; gorgets, platform pipes, cache blades, ear spools, copper crescent gorgets, and bear canines have been recorded in the region. Raw materials include silver, copper, galena, obsidian, mica, ochre, and steatite. Numerous burial mounds were also associated with the centers (Fig. 34).

Burial mounds of the type found at the Hopewellian-influenced Kipp Island phase 2 site in central New York (Ritchie and Funk, 1973:155) are almost unknown for southwestern New York and northwestern Pennsylvania. This may result partly from indiscriminate excavations and subsequent lack of publication. Mounds One and Three at Irvine do appear to be early and related to Hopewellian influence. Among items recorded for Mound One are sheet silver, a gorget, flake knives of chalcedony, a plain-collared rim sherd similar to the ware excavated by the author (Fig. 32c), as well as Manker and Chesser points of Ohio chalcedony. Mound Three contained an adze, a curved-base pottery platform pipe, a celt, and several Onondaga chert side-notched points similar in form to the Chesser Notched type (Carpenter, 1956:90–93; Plates 8–12, 19). Other Hopewell connections at Irvine include a feature at 36 WA 97 (Fig. 32a, b) and a feature at the Harrington farm site, 36 WA 87, across the river (Fig. 33a–h). The Hopewellian influence at the Irvine Regional Center is within the definition of Ritchie's Squawkie Hill phase (Ritchie, 1965:213–215). The differences in the content of the Irvine mounds suggests that mound eonstruction there was eontinuous from the Middle Woodland Hopewell through the A.D. 500 to A.D. 950 suggested dates for the Raccoon Notched Point Assemblage.

A similar situation exists at the Sugar Run Mounds (36 WA 2), located 14 km above Warren, Pennsylvania, on the Allegheny River (Figs. 1 and 34). Mounds Two and Three of the group contained artifacts related to the Ohio Hopewell Middle Woodland and date too early to be associated with the Raccon Notched Point Assemblage. The inventory includes cache blades, side- and corner-notched points of jasper and chert, sheet copper, chalcedony flake knives, biotite, muscovite, banded slate and sandstone gorgets, a pentagonal pendant, a ceramic elbow pipe, bear canines, celts, decorated pottery similar to Illinois Hopewell, human bone and red ochre (Carpenter, 1950:184–197).

Prior to A.D. 500, Middle Woodland Hopewellian manifestations in western New York and northwestern Pennsylvania fit within Ritchie's definition of the Squawkie Hill phase.

The Allegheny River Phase, A.D. 500–950

In central New York, components of Ritchie's Kipp Island phase of Middle Point Peninsula and the Hunters Home phase of Late Point Peninsula are represented as a cultural continuum ranging from circa A.D. 500 to A.D. 900. In western New York and northwestern Pennsylvania, the distinctive Raccoon Notched Point Assemblage manifestations warrant designation as a separate phase, herein termed The Allegheny River phase. This distinct entity can be recognized in the northern Upper Ohio Valley after A.D. 500.

Extending from the upper Allegheny in Pennsylvania and New York, north toward Lake Erie (Fig. 35), the Allegheny River phase, appears to be a merger of local Middle Woodland and intrusive Hopewell cultures, culminating in the Allegheny Iroquois. It is hypothesized that the Allegheny Iroquois developed directly out of a Middle Woodland base represented in the archaeological record by the Raccoon Notched Point Assemblage. There are 42 Allegheny Iroquois sites on the upper Allegheny River in western Pennsylvania and western New York, dating from circa A.D. 940 to A.D. 1525. Cultural development through time is well supported in the eeramic assemblage where a transition from the Pre-Iroquoian pottery of New York to the Allegheny Valley Iroquois pottery occurs. The development is most comparable to the Ontario Iroquois tradition put forth by Wright (1966).

Whether it can be explained by the development of the bow and arrow or by some force that disrupted the Hopewell Interaction Sphere and the distribution of trade goods, between A.D. 500 and A.D. 600 a major transition took place in the study area. The

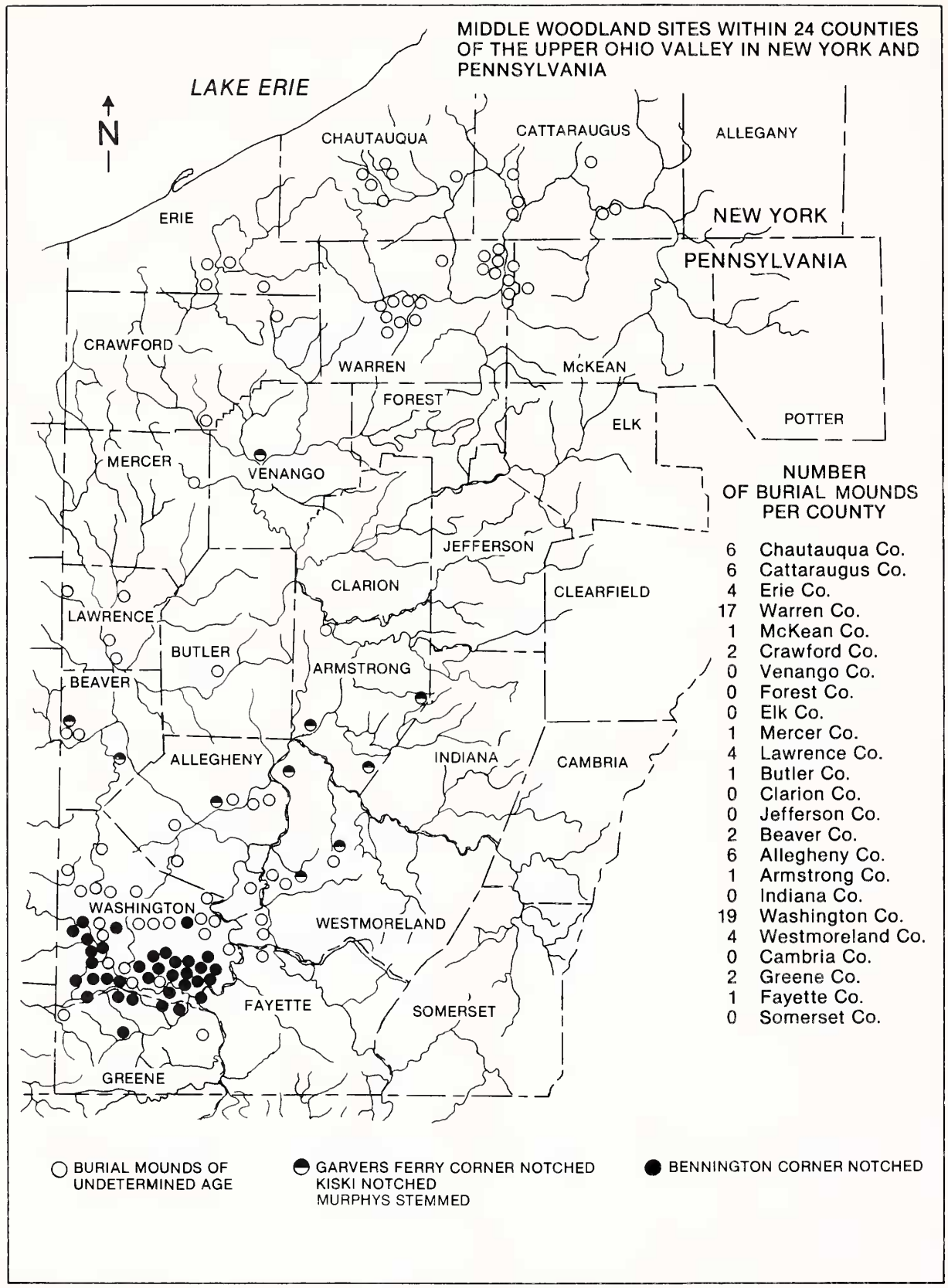

Fig. 34.—Distribution of sites with Bennington Corner Notched, Garvers Ferry, Kiski Notched, and Murphys Stemmed points as well as known burial mound locations.

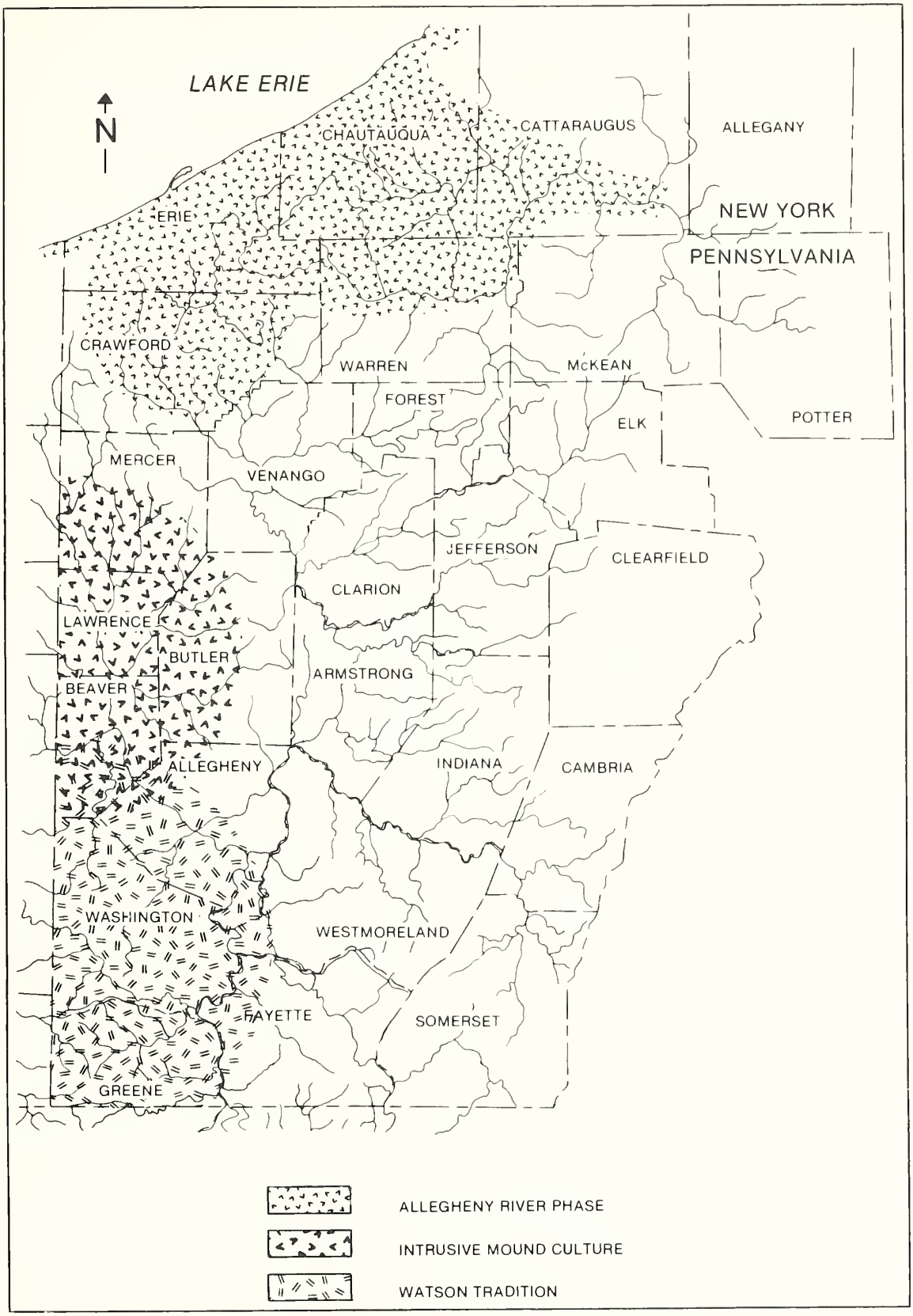

Fig. 35.—Locations of the Allegheny River phase, Intrusive Mound culture, and the Watson tradition.

heavier points such as the Chesser Notched diminished and the distinctive Flint Ridge chalcedony flake knives were fashioned almost entirely from local cherts. Raccoon Notched points are found in association with triangular points that date between circa A.D. 525 and A.D. 900. By A.D. 1000 the Raccoon forms were no longer a part of tool kits. Evidence from the Melnick site indicates that the triangular forms outnumbered the Raccoon Notched points by A.D. 600.

Village debris, although distributed over extensive areas, is thinly scattered, suggesting either widely spaced dwellings in unconsolidated villages or intermittent occupations on the same locus. The village perimeters do not appear to have been fortified which may explain the lack of consolidation. Three seasons of excavations at the Melnick site failed to locate either a palisade or a trench encircling the site, although such features are generally present in later villages associated with Allegheny Iroquois occupations. Because of deep cultivation, no house floor outlines were discerned at Melnick. All identified postmolds were mapped but no structures were evident.

While the Allegheny River phase cannot be completely defined without more extensive fieldwork, previous fieldwork and limited excavations do reveal certain artifact associations in the archaeological record. Dates for sites along the Allegheny River and along a tributary of French Creek, all located within a 100 km of one another, show few gaps within the phase (Fig. 29). Based on these dates, it is argued that the study area supported a cultural continuum through the Middle Woodland period and into Late Woodland time.

To briefly review some of the data presented above, Raccoon Notched materials were still present at the cremation burial at the Rieder site circa A.D. 830; however, the overlying strata producing Mead Island ceramics (dating circa A.D. 1020) contained only triangular points. Triangles continued in constant use throughout the Late Woodland Mead Island and Iroquois occupations.

The relationship of the Allegheny Iroquois to the Mead Island Culture (circa A.D. 840 through A.D. 1200) is currently under study (Lantz et al., 1982: 59; 1988 excavations at 36 ER 8). Mead Island appears to intrude into Iroquois country from the south and southwest and possibly could have been later absorbed into Allegheny Iroquois.

Burial mounds continued at least into the early period of triangular point utilization, although on a smaller scale. Irvine Mound Two (C-36 WA 237), located on the Irvine Flats (Figs. 1 and 34), contained Middle Woodland material that is later than Hopewell and more closely related to the Raccoon Notched Assemblage. The inventory includes a triangular point, a pendant, oxidized pyrites, a strike-a-light, red and yellow ochre, and the remains of human teeth (Carpenter, 1956:92 and Plate 16). Mound Five (C-36 WA 232), located on a bluff across the Allegheny River from the main Irvine mound group, also contained triangular points, along with a broken slate pendant, an unusual serpentine celt, and fragments of human tooth enamel. Associated with the triangular points are pendants of local siltstone and occasionally of Ohio banded slates. These have been noted in surface collections from sites dating after A.D. 500. Grit-tempered, corded pottery similar to Jack's Reef corded and Kipp Island types are found in collections from the Irvine Flats (Fig. 28b–f). Stone tools consisting of celts, sinewstones, pitted stones, and anvils have also been recovered from the surface and a stone platform pipe has been recorded at Irvine. The acidity of soils in western New York and Pennsylvania precludes the recovery of bone; it must be assumed that the bone inventories would mirror those described by Ritchie (1965:230, 231).

Data from the Melnick site (36 ER 31) show similarities in ceramics and lithics between sites on the Allegheny River and those on a tributary of French Creek. However, quantities of distinctive triangular points differentiate these two areas. Referred to as Waterford triangles, these points are similar to the Levanna point but exhibit a unique notch or deep off-center concavity on the base (Lantz et al., 1982: 65). Examples of the type are illustrated in Fig. 31a, e, i, l, and m and in Fig. 25gg and hh. The Waterford triangles were numerous at Melnick between A.D. 525 and A.D. 770 and were still present circa A.D. 1350 at the Boleratz II site (36 ER 32), located 1.2 km upstream from Melnick (M. Jude Kirkpatrick, personal communication, 1987). A rim sherd from Boleratz II with oblique trailing on an incipient collar is similar to Ripley Plain ceramics from the Middleport site in Ontario and the Ripley Triangular type from the Erie site at Ripley, New York (MacNeish, 1952:112). Waterford triangles also appear as a minority type at several sites on the Irvine Flats and at 36 WA 203 on the Brokenstraw drainage (John Zavinski, personal communication, 1983).

REGIONAL INFLUENCES

Southwestern Pennsylvania, West Virginia and Southeast Ohio

In southwestern Pennsylvania, recorded Middle Woodland sites are located predominantly to the extreme west and few are known for Greene, Fayette, Somerset, and Cambria Counties. Documentation from the CMNH files shows a concentration of Middle Woodland sites in Washington County, where 113 Middle Woodland locations and 19 associated burial mounds are recorded (Figs. 30, 34 and Appendix II). The Raccoon Notched Point Assemblage is most noticeable in Washington County near Ten Mile Creek where it is found in association with Bennington Corner Notched points. Of all the counties in the study area, Washington has the greatest number of sites (41) listing Raccoon Notched points in the inventories. This could be misleading, however, because Washington County has the highest total number of recorded sites (1,052 sites compared with only 180 in adjacent Greene County). Westmoreland County is listed as having 47 Middle Woodland sites and four mounds. Somerset County to the east has no known burial mounds.

The use of Ohio flints, methods of human interment, and the material culture express a conservative relationship with several outlying traditions. Hopewell influence is implied by the continued use of exotic Ohio flints, specific point types, and mounds with stone slab vaults. Washington County is located on the southeastern fringe of the Hopewell Interaction Sphere of the Sciota tradition (Seeman, 1979:258–263). However, the elaborate mortuary customs within the Hopewell Interaction Sphere during early Middle Woodland (200 B.C. to A.D. 400) (Seeman, 1979:237) are almost unknown in southwestern Pennsylvania and the Panhandle of West Virginia. Only the Peters Creek Mound (C-36 AL 271), excavated in 1890, contained mortuary items that are possibly Hopewell. Located near Clairton on the Monongahela River in Allegheny County, Peters Creek Mound contained two copper breastplates measuring 43.0 cm by 22.5 cm and 35.5 cm by 15.0 cm respectively; three pieces of folded copper; one stone cone; four bear canines, one still attached to a drilled jaw bone and sheathed in copper; 60 disk-shaped beads; 28 large, barrel-shaped shell beads; a fully grooved axe; three celts; and red ochre, all associated with the remains of a skeleton (Schooley, 1902:1–10).

None of the early southwestern Pennsylvania burial mounds researched by Carpenter (1950) contained diagnostics of Hopewell. As a whole, raw materials and artifacts diagnostic of the Interaction Sphere as listed by Seeman (1979:304, 313) are extremely rare although Snyders points are sometimes seen in collections.

The concentration of Middle Woodland sites and mounds and the presence of Raccoon Notched points in southwestern Pennsylvania supports Mayer-Oakes's suggestion that Raccoon Notched points were associated with Middle Woodland mounds. He stated: "While there is very little evidence to associate this point type with Middle Woodland mounds, it appears on camp sites which appear to represent this period and will be so considered for the time being" (Mayer-Oakes, 1955:87).

After A.D. 500, the Middle Woodland period in southwestern Pennsylvania appears to have been most closely related to the Watson tradition (Hemmings, 1984:47); however, there are also similarities to the Buck Garden Culture (Maslowski, 1985:27), the Peters phase (Prufer and McKenzie, 1966; Seeman, 1980:13), and the Newton focus (Seeman, 1980:1–3).

The Watson Tradition

Hemmings (1984:47) describes the Watson tradition as a "distinctive cultural tradition that emerged, developed, and flourished in the Upper Ohio Valley." He further described the tradition as "a conservative and successful adaptation" that could be recognized from circa A.D. 180 until agriculture and villages of the Monongahela appear by A.D. 1000. This development into Monongahela was also suggested by Maslowski (1985:30). The Watson tradition was named after the Watson Farm site (46 HK 34) and associated burial mounds within the northern Panhandle of West Virginia (Hemmings, 1984).

While evidence that southwestern Pennsylvania was heavily influenced by the Watson tradition is not overwhelming, reported sites and a few dates show that some Watson traits did penetrate the area. The Watson village and associated mound (46 HK 34) were reported by Dragoo (1956). The site pro-

duced mostly limestone-tempered Watson Cord-marked pottery along with a smaller percentage of grit-tempered Mahoning Ware. Flint Ridge chalcedony was present in the lithic industries of both the mound and the village. Artifacts included flake knives. Chesser Notched points, and other notched varieties of points.

The predominant occupation at Watson was radiocarbon dated between A.D. 500 ± 100 years and A.D. 930 ± 55 years. The earlier date of A.D. 500 is from a hearth reported as predating the Watson Mound occupation (McMichael, 1968:62), while the A.D. 930 date is one of several obtained by a University of Pittsburgh field school at the Watson village site (Maslowski, 1985:26).

Hemmings has proposed that the Watson site was an integral unit of a cultural tradition that flourished in the Upper Ohio Valley from the first millennium A.D. This Watson tradition emerged from a Hopewellian mortuary ceremonialism and trade network, climaxing in Ohio by A.D. 200; however, it continued as a significant, but continuously diluting Hopewellian manifestation (Hemmings, 1984).

Perhaps one of the most important mounds related to the Watson tradition is the Pollocks Hill Mound (C-36 WH 1051), located above the Monongahela River in Union Township, Washington County. This mound was salvaged by George S. Fisher in the early 1930s during its almost complete destruction by numerous excavators (Cadzow, 1933: 3–5, 16). Artifacts recorded consisted of two rolled copper beads, a celt, Manker and Chesser Notched points, an untyped stemmed and side-notched point, two drilled bear canines, two bone fish hooks, and, most importantly, a Raccoon Pentagonal Corner Notched point (Cadzow, 1933:16; Fig. 8, #7). With the exception of the bear canine, copper beads, and the Raccoon Notched point, the material from this mound is similar to material from the Avella Mound (Verna Cowin, personal communication, 1988).

The Avella Mound (36 WH 415) was excavated near Avella in Washington County by the University of Pittsburgh (Applegarth and Cowin, 1982:241). This mound, investigated by Cowin from 1975 to 1978, is believed to be a late expression of the Watson tradition but no ceramics were recovered (Verna Cowin, personal communication, 1987). Radiocarbon dates of A.D. 530 ± 115 years (SI 3499), A.D. 790 ± 110 (SI 2943), and A.D. 850 ± 90 (SI 3498) were reported (Applegarth and Cowin, 1982:254). Of note is the association of a Bennington Corner Notched point with the A.D. 790 ± 110 date (SI 2943).

Another pertinent mound excavation is the McKees Rocks Mound in Allegheny County. This mound was investigated by CMNH in 1896; the mound and associated materials were subjected to reanalysis by Edward V. McMichael of Indiana University in 1956. McMichael saw relationships of some of the artifacts to New York Hopewellian materials and also to the upper Allegheny in northwestern Pennsylvania. However, he noted that he saw a closer relationship to the Watson Mound (McMichael, 1956:144).

Richard L. George of CMNH completed excavations in 1984 at a Middle Woodland site having Watson and Mahoning ceramics along with flake knives and points of Flint Ridge chalcedony. This Westmoreland County site, the Billy site (36 WM 677), is associated with the Billy Mound (36 WM 50). George reports that the Billy Mound was completely disturbed by previous excavators (personal communication, 1986).

Located within the northern Panhandle of West Virginia, the Fairchance site, excavated by Hemmings in 1984, represents an important phase within his Watson tradition. Radiocarbon dates from the mound and village place the occupation at circa A.D. 150. At Fairchance, Watson Ware predominated and the lithic assemblage bears similarities to that of the Watson site. Raccoon Notched and triangular points have not been included as diagnostics with the Watson tradition; however, they have been found in surface collections from the Watson site where triangular points are more common than the Raccoon Notched forms.

Based on the sites and dates presented above and data in the CMNH site files (See Appendix II) a proposed sphere of influence for the Watson tradition is shown in Fig. 35. The post-Hopewellian period in southwestern Pennsylvania is best represented within the Watson tradition. Furthermore, future research may prove that the Raccoon Notched points, the Bennington Corner Notched point, and triangular points should be included as diagnostics within this tradition. It is likely that the triangular point emerges at a later date in southwestern Pennsylvania than it does in northwestern Pennsylvania and western New York.

The Buck Garden Culture, the Peters Phase and the Newton Focus

There is a remote chance that the Buck Garden Culture of central West Virginia could be related to the post-Hopewellian period in southwestern Pennsylvania. The Buck Garden Culture, radiocarbon

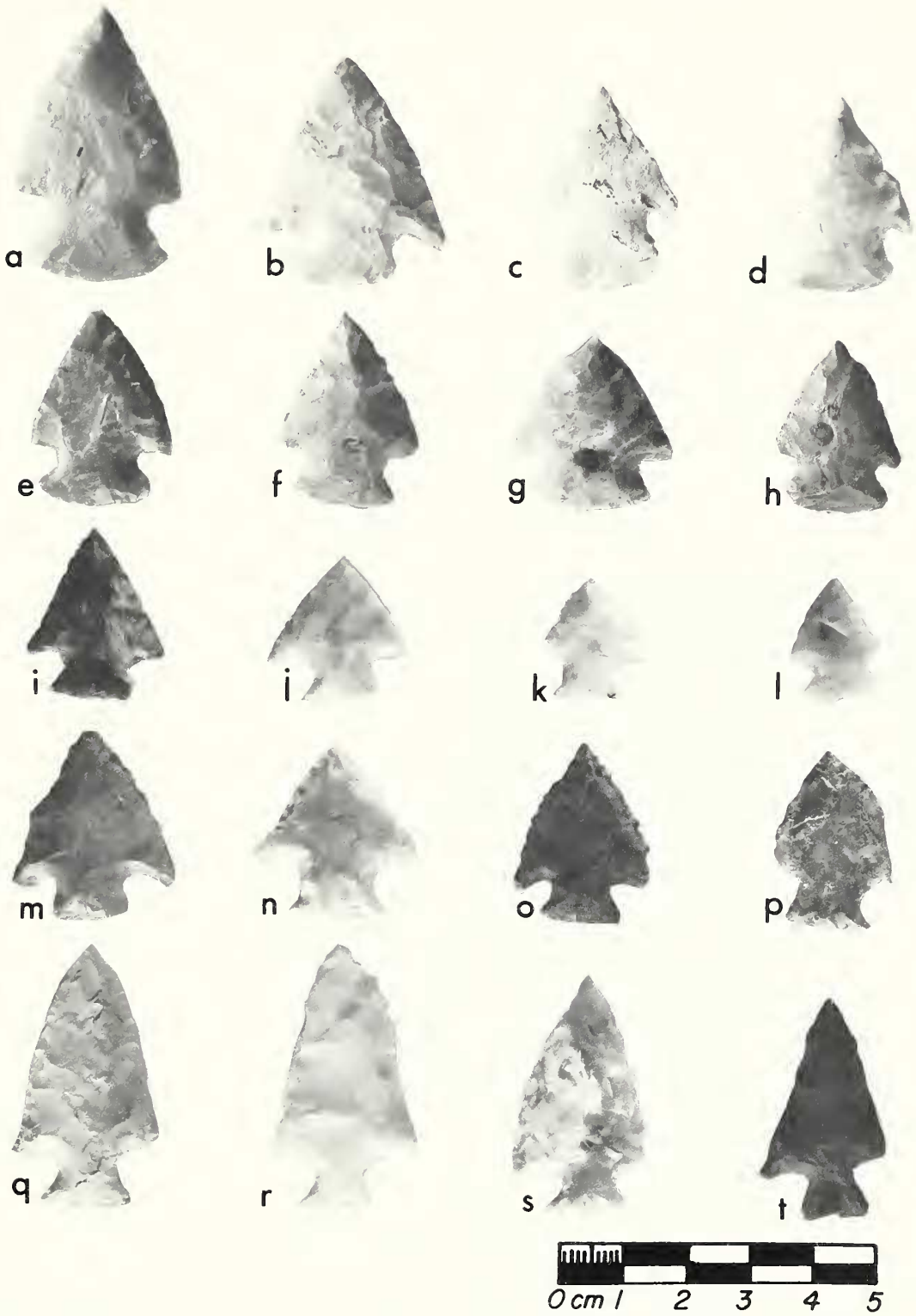

Fig. 36.—Middle Woodland points by type, material of manufacture, and provenience. Bennington Corner Notched: a. Loyalhanna, C-36 WH 1044; b. Flint Ridge, 36 WH 443; c. Unknown, 36 WH 786; d. Flint Ridge, 36 WH 443; e. Uniontown, 36 WH 662; f. Onondaga, 36 WH 824; g. Flint Ridge, C-36 WH 1045; h. Ten Mile, 36 WH 824. Kiski Notched: i. Coshocton, 36 WM 30; j. Flint Ridge, 36 BV 68; k. Flint Ridge, 36 AL 19; l. Flint Ridge, 36 WM 140. Garvers Ferry: m. Onondaga, 36 BV 24; n. Flint Ridge, unknown; o. Unknown, 36 AL 19; p. Coshocton, 36 BV 68. Murphys Stemmed: q. Chalcedony, unknown; r. Flint Ridge, 36 VE 11; s. Flint Ridge, 36 BV 68; t. Coshocton, 36 AR 29.

dated from A.D. 690 ± 110 years (RL 1191) to A.D. 1012 ± 110 years (RL 1192), has triangular points, stemmed and expanding-stemmed points including Chesser Notched, and ceramics similar to Watson Ware (Maslowski, 1985:27). Many mounds in central West Virginia are attributed to this complex (McMichael, 1968:26–29; Maslowski, 1985:23). It is important to note that the Bennington Corner Notched point (Fig. 36a–h) is comparable to a type illustrated by McMichael (1968, Fig. 28h).

A similar taxonomy is reported for the Peters phase of southeastern Ohio (Prufer and McKenzie, 1966; Seeman, 1980:13). Seeman places the Peters phase at circa A.D. 500 to A.D. 800 and recognizes a similarity between Peters Cordmarked and Watson Cordmarked pottery. The Peters phase lithics include triangular points, Chesser Notched points, and fishspears.

The Newton focus (circa A.D. 500 to A.D. 800) of southern Ohio is described by Seeman (1980:1–3) as occupations of 1.2 to 2.0 ha on elevated floodplain terraces and associated with mounds containing stone-covered interments. Diagnostics are identified as Chesser Notched points, chipped flint, ground stone celts, stone discs, thin rectangular state gorgets, large pentagonal knives, vertical cordmarked pottery with angular shoulders (Newton Cordmarked), and bone tools. Triangular points and prismatic blades are not recognized within this assemblage.

Seeman (1980:17) emphasizes that the Peters phase and the Newton focus lack precise definition, suggesting that the emphasis should be put on site similarities rather than on slight attribute differences. He suggests that, as a group, they should be referred to as the Central Ohio Valley Early Late Woodland. Geographically, this would include the general area of Pittsburgh, Pennsylvania, west to Cincinnati, Ohio. The Central Ohio Valley Early Late Woodland, as suggested by Seeman (1980:17), overlaps the Middle Woodland Watson tradition occupations (Hemmings, 1984:47).

The Bennington Corner Notched Point

Bennington Corner Notched points have a considerable presence in southwestern Pennsylvania. They are found in concentrations along branches of Ten Mile Creek in Washington and Greene counties and often near mounds. This point type (Fig. 36a–h) was first referred to as a Quail Tail by Howard Keys around 1940 (William Bennington, personal communication, 1988); Fogelman (1984) calls the form the Bennington Quail Tail. In 1981, James Herbstritt recognized these points in the collection of William H. Bennington of Washington County and suggested the name Bennington Corner Notched. The point was described as triangular and broad, exhibiting pronounced corner-notching on a thin blade which thickens toward the base (William Bennington, personal eommunication, 1987). A radiocarbon date of 790 ± 110 years (SI 2943) was obtained on a Bennington Corner Notched point found in association with a burial in the Avella Mound in Washington County (Applegarth and Cowin, 1982:241).

Most of the Bennington Corner Notched points examined have excurvate bases resembling the tail of a quail; however, some are almost straight. A similarity in outline is seen with Type 2B of the Raccoon Assemblage (Fig. 5); however, the Bennington Corner Notched point has a thicker base. One of the main characteristics of Raccoon Notched points is their thinness from the blade tip to the base with the sample averaging 2.2 mm at the base. The average blade thickness for the Bennington Corner Notched point as described by Boldurian is from 5 to 6 mm (Boldurian, 1985:171). Generally, these points were manufactured of local Ten Mile flint but other exotic materials were also utilized (James Herbstritt, William Bennington, personal communications, 1986).

Unlike the northwestern counties of Pennsylvania where glacially transported Onondaga cherts were available, southwestern Pennsylvania had outcrops of quality lithics in Lawrence, Washington, Greene, Fayette, and Westmoreland counties. These sources include the Zaleski Member of the Allegheny Formation (Sky Hill Flint) (Stout and Schoenlaub, 1960: 8), the Uniontown Formation of the Monongahela Group reported by Eisert (1974:32–39), the Greene and Washington Formation of the Dunkard Group (Ten Mile Flint), the Pittsburgh Formation of the Monongahela Group (Sewickley Flint), and the Brush Creek Member of the Conemaugh Group (Brush Creek Flint), all reported by Herbstritt (1981:1–9). Bennington reports that a number of the points bearing his name were manufactured from imported Flint Ridge materials while others were produced from local and semiexotic varieties of the above-named types.

Lithic sources differ widely in southwestern Pennsylvania in comparison with what has been reported for northwestern Middle Woodland. In the south, Flint Ridge chalcedony and Coshocton, Ohio, lithics

do not fade from the record at the time the small, notched forms of projectile points appear. Thus it is important to identify the geographic boundaries for the Bennington or Quail Tail points.

Since this point is a recently described type, its name does not appear on older survey records. Review of photographs and drawings and personal interviews of collectors in southwestern Pennsylvania segregrated Bennington point recordings by county: 20 were recognized in Washington, five in Greene, and one in Beaver. This inventory was reviewed by Bennington as well as by Bill Ringlesbach of McDonald, Pennsylvania, and these two long-term collectors verified 39 locations that produce the type. At 12 of these sites, Raccoon Notched points and triangular points were found in association while 19 others had the Bennington forms in association with Raccoon Notched material but no triangles. Plots for the Bennington finds and associations are shown on Fig. 34 and the locations are documented in Appendix II. The Cowden #2 site in Washington County has the heaviest concentration of Raccoon Notched and Bennington Corner Notched points in association; no triangular points are reported at Cowden #2, suggesting that triangular points may date later in southwestern Pennsylvania.

Summary

In southwestern Pennsylvania, the elaborate mortuary customs of Middle Woodland are present; however, they are weakly expressed. From this Middle Woodland base, perhaps through a blending of local and intrusive traditions, a diluted Middle Woodland manifestation was retained in the area. This manifestation is most closely aligned with traits of the Watson tradition. Future research may add the Raccoon Notched, Bennington Corner Notched, and triangular points to the Watson trait list. Current evidence suggests that the replacement of notched point varieties by triangles may date later in the south.

Central Western Pennsylvania and Eastern Ohio

The only excavations reported for the central region of western Pennsylvania are the Chambers Mound (36 LR 11), excavated by John Zakucia (1961) in the 1950s; the Boarts site (36 LR 36) in 1971–1972 and reported by the University of Pittsburgh (Adovasio et al., 1974); and the Morrow site (36 LR 5) (Mayer-Oakes, 1955:83–85). Any other interpretation of this region must be gleaned from Mayer-Oakes and recordings in the CMNH site files.

The Chambers Mound had some Hopewell attributes, namely a Snyders point fragment, Chesser Notched points, bladelets of chalcedony, complete two-hole gorgets, a hematite cone, Mahoning Ware ceramics in the mound fill, and other diverse cultural items (Zakucia, 1961). The Boarts site is recorded as a multicomponent lithic workshop. Middle Woodland material reported from the Boarts excavation and from private collections include Chesser Notched and Snyders-like points (Adovasio et al., 1974:48). The Morrow site contained large gorgets, a copper sheathed mica crescent, and a large copper bead. The Chambers Mound, Boarts, and Morrow site materials attest to some degree to ceremonialism of Hopewell influence in the Mahoning drainage at an early time period.

In adjacent eastern Ohio, Mayer-Oakes (1955:82, 83) reported on a mound in Trumbull County (33 TR 5), north of the Mahoning drainage. This mound was partially excavated by Zakucia, Platt, and Wakefield in 1951 and contained flake knives of chalcedony, a Snyders-like point base, slate gorgets, copper hemispheres, grit-tempered pottery, cache blades, and other items. The North Benton Mound, on the upper Mahoning drainage in Ohio, contained more diagnostic Hopewell material. This large mound was excavated in the 1930s and contained a limestone platform pipe, chalcedony flake knives, ear spools, copper hemispheres, a breastplate, a panpipe, silver, galena, mica, and other Hopewellian artifacts (Magrath, 1945:42–45; Mayer-Oakes, 1955: 82).

The central counties of western Pennsylvania are within the fringe of the Hopewell Interaction Sphere as defined by Seeman (1979) and, earlier, by Struever and Houart (1972:48–52). This sphere of influence declined by A.D. 500. During the Hopewell climax, artifacts and cultural ideas were moving east and north along the valleys of the Ohio and Mahoning Rivers, as well as through the Allegheny Valley's Regional Centers as exemplified by the Irvine Flats, Sugar Run and Killbuck sites (Carpenter, 1950; 1956). Seeman suggests a connection with the New York Point Peninsula (Seeman, 1980:18). This connection was also noted by Ritchie when discussing the diffusion and momentum of Hopewellian traits into western New York by way of the Ohio and Allegheny Rivers (Ritchie, 1965:228).

As noted earlier in this report, all cultural ties with Hopewell terminate in the upper Allegheny by

A.D. 500. This is not the case in the west central counties. Here the connections continued into later Middle Woodland time—during the period when the Raccoon Notched Point Assemblage was utilized. In Lawrence and Beaver counties, adjacent to the Ohio line, Raccoon Notched point sites are clustered on the Mahoning and Raccoon Creek drainages (Fig. 1). The Raccoon Assemblage tools were manufactured primarily from Vanport chalcedony from Flint Ridge and Upper Mercer flints from Coshocton County, Ohio.

At the Morrow (36 LR 5) and Chambers (36 LR 1) sites in Lawrence County and at the Outdoor Theater site (36 BV 24) in Beaver County, numerous Chesser Notched points, triangular points, and Raccoon Notched points have been collected from the surface. Mayer-Oakes (1955:81) reported a steatite platform pipe of the Intrusive Mound type from a site near Edinburg (36 LR 3). More recently, Richard Gartly reported Raccoon Notched points in association with triangular points and Mahoning Ware ceramics at 36 LR 3 (Johnson et al., 1979:62).

The Intrusive Mound Culture

Based on the data presented above, the Middle Woodland cultural material of west central Pennsylvania seems most associated with the Intrusive Mound Culture of southern Ohio, as described by Morgan (1952:83–98) and Seeman (1980:11–13). The Intrusive Mound Culture may be represented in Pennsylvania from Lawrence County south through Beaver County, based on the distribution of Raccoon Notched points, triangular points, keeled-base platform pipes, pendants, and Mahoning ceramics. Johnson et al. (1979:83) report that ceramics from the Edinburg site (36 LR 3) are similar to those of the Intrusive Mound Culture of Ohio. The Intrusive Mound Culture, or a similar phenomenon, rapidly dissipated to the south in Washington and Greene counties and to the east in Westmoreland and Fayette counties. There is no evidence of the Intrusive Mound Culture in Cambria and Somerset counties. However, because of cultural overlap and diffusion, traits of the Intrusive Mound Culture occasionally coexisted with the Watson tradition.

Mayer-Oakes recognized that Middle Woodland populations were selecting fine-grained, exotic flints for the production of Raccoon Notched points in the area now comprising Lawrence and Beaver counties and included the lithic preferences in the original type description (Mayer-Oakes, 1955–1987). The same observation was noted by Alam (1972) and Zakucia (personal communication, 1986). This preference for exotic lithics is significant, as it is in sharp contrast with what has already been documented for the upper Allegheny drainage. Ohio flints accounted for only 2.3% of the Raccoon Notched Assemblage at Irvine and only 2% at Melnick.

In view of the statements by Mayer-Oakes, Zakucia, and Alam, an analysis of 53 Raccoon Notched points from the Outdoor Theater site, the type station (36 BV 24) was conducted. The results show that Coshocton County, Ohio, Upper Mercer flint accounted for 38% of the sample; glacial outwash Onondaga cherts were also 38% of the total. The remaining distribution showed that 20% was of Flint Ridge chalcedony and 2% was of Plum Run flint from Alliance, Ohio, while the remaining 2% was from unknown sources. The utilization of Ohio lithic sources may have resulted from availability. The northern sites in this study are situated 225 km away from the Flint Ridge and Coshocton quarries compared with the 120 km between the Outdoor Theater site and the exotic lithic sources.

Garvers Ferry Corner Notched, Kiski Notched, and Murphys Stemmed Points

In 1982, three Middle Woodland points, Garvers Ferry Corner Notched (Fig. 36m–p), Kiski Notched (Fig. 36i–l), and Murphys Stemmed (Fig. 36q–t) were described and assigned names by Richard L. George of CMNH (George, 1982:205–209). George lists seven sites with various combinations of these points and currently a total of ten locations are known to have produced these points (Appendix II and Fig. 34).

Based on the stratigraphic position of the Garvers Ferry Corner Notched point at the Blawnox site (36 AL 19), George places the type as Middle Woodland or early Late Woodland. Likewise, he sets the time for the Kiski Notched point at late Middle Woodland. The Murphys Stemmed point was documented on sites that had Middle Woodland affinities (George, 1982:205–209).

The geographic range of this point group was recently expanded westward to drainages in Beaver County. Archaeological material from the Outdoor Theater site (36 BV 24), the Raccoon Notched type station, was examined by George and the author. George verified the presence of his newly defined Middle Woodland types in Emil Alam's collection. Several Bennington Corner Notched points were also in the Outdoor Theater site inventory. It should be noted here that the Bennington Corner Notched and

the Garvers Ferry Corner Notched points are technologically quite similar (James Herbstritt, personal communication, 1986; Boldurian, 1985), as is the Bennington Quail Tail (Fogelman, 1984). The Outdoor Theater site was occupied throughout the complete range of the Middle Woodland period; therefore, the association of Raccoon Notched, Garvers Ferry Corner Notched, Kiski Notched, Murphys Stemmed, Bennington Corner Notched, and triangular points could be expected here.

Various point types are also represented at the Coble Farm site (36 BV 68) recorded in 1975. This site dates within Middle Woodland, but probably prior to A.D. 500. Coble lacks Raccoon Notched and triangular points but does include Garvers Ferry, Kiski Notched, Murphys Stemmed, reworked Snyders, Chesser Notched, and Manker Stemmed points, along with chalcedony flake knives, cache blades, and rectangular, two-hole gorgets. While most of the lithics at Coble were produced from Sky Hill (Zaleski) and Onondaga varieties, 40% of the lithics were from Ohio sources. There were also minor representations of southwestern Pennsylvania's Loyalhanna and Uniontown flints. The presence of Uniontown material suggests a northward movement of the Bennington Corner Notched point. Ceramics have never been recovered at Coble Farm, thus this location may have served as a hunting station operating within the Hopewellian Interaction Sphere (Seeman, 1979:258–263). The collections from the Coble Farm site hint that Garvers Ferry Corner Notched, Kiski Notched, and Murphys Stemmed points predate A.D. 500 at that location. However, the inventory from the Outdoor Theater site indicates that these forms continued into later Middle Woodland.

The new point types, Garvers Ferry, Kiski Notched, and Murphys Stemmed, were in use during the span of the Hopewell Interaction Sphere and continued into the period when Raccoon Notched tools were utilized. Presently George's types are represented in central western Pennsylvania; however, this distribution may widen as additional studies are made of collections.

Summary

West central Pennsylvania from circa A.D. 500 to A.D. 950 appears to be most closely related to the Intrusive Mound Culture of southern Ohio, based on the presence of Raccoon Notched and triangular points, pentagonal knives, and a similar form of platform pipe. The exotic lithics reinforce the Ohio connection as does the presence of Mahoning ceramics. In contrast with the case in the north, the use of Ohio lithics does not decline with the introduction of the Raccoon Notched Point Assemblage.

CONCLUSIONS

The major concern of this report has been to establish the Racoon Notched point, first described by Mayer-Oakes, as a major type with widespread distribution in the Upper Ohio Valley in Pennsylvania and New York. Two hundred thirty-six sites were identified as having the type. The distribution of sites has been documented by Fig. 1 and listed by county in Appendix II. The research to collect this data covered a four-year period and involved the review of over 5,500 site forms housed at CMNH. Regional conservation archaeologists and field associates of the Museum contributed additional data as did the documentation of major private collections within the study area.

Five Raccoon Notched point types have been defined and described, including the range of variation within each type. Also identified were related tools, including four knife forms, four drill types, scrapers, and strike-a-lights. It was recognized that the point and tool types as a group were found on major Raccoon Notched point sites throughout the Upper Ohio Valley; therefore, the term assemblage was applied to the artifact group. Documentation of the Raccoon Notched Point Assemblage as an entity came from three major locations: Buckaloons (36 WA 99), Melnick (36 ER 31), and the Outdoor Theater site (36 BV 24). The assemblage and associated ceramics from these three locations are illustrated in Figs. 23–28.

The date range for the Raccoon Notched Point Assemblage in northwestern Pennsylvania and western New York commences after A.D. 500 and terminates at A.D. 950. Although few dates were available, the interval was established from dated components of earlier and later cultures bracketing the Raccoon Notched materials. Further substantiation of the date range was obtained from radiocarbon determinations on similar manifestations in New York and Ohio.

After compiling the site information and plotting

the distribution of Middle Woodland sites, associated Middle Woodland tools, and burial mound locations, it became apparent that certain areas were focal points for Middle Woodland activities. As a result, seven Regional Centers were designated: Zawatski, Hotchkiss, Sugar Run, Irvine, French Creek, Edinburg, and Raccoon Creek. These centers and their ancillary sites are shown in Fig. 1.

Following the distributional studies and the identification of tool types and lithic sources for manufacturing the tools, regional variations were observed. Ritchie's Squawkie Hill phase within the Hopewell tradition in central and western New York shows a mingling of Hopewell with local complexes circa A.D. 160 that dissipated by A.D. 500 to blend into the Kipp Island phase (Ritchie, 1965:213–215; 232–252). Along the Allegheny River in western Pennsylvania and western New York a culture developed from a similar cultural base (Squawkie Hill phase). It eventually replaced the Kipp Island lithics with the Raccoon Notched Point Assemblage.

In the Raccoon Assemblage, side-notched points are most prevalent, accounting for 66% of the total. Corner-notched points, similar to Jack's Reef Corner Notched, make up only 34% of the total. There are obvious differences in point sizes; Raccoon Notched points are smaller than the Jack's Reef points of the Kipp Island phase.

Another point identified and illustrated is the Waterford Triangle (Fig. 31a, e, i, l, m), a distinctive point found mostly on the French Creek drainage. Waterford Triangles are dated at the Melnick site (36 ER 31) from A.D. 525 to A.D. 770. They were retained as late as circa A.D. 1350, based on their presence at the Boleratz II site (36 ER 32). It was also noted that the later Ontario Iroquois ceramics found on Allegheny Iroquois sites to the east have not been recovered in the French Creek valley. It is entirely possible that additional research will define an additional phase or phases and refine the Allegheny River phase proposed in this publication.

The Allegheny River phase is recognized in the upper Allegheny drainages in Pennsylvania and New York (Fig. 35). Considered to be a merger of local Middle Woodland and Intrusive Hopewell, a cultural continuum to the Allegheny Iroquois is proposed and the case is made through a series of radiocarbon dates. The dates for the Allegheny River phase, A.D. 500 to A.D. 950, coincide with those of the Raccoon Notched Point Assemblage.

In southwestern Pennsylvania, the period when Middle Woodland Raccoon Notched points were utilized overlaps the Watson tradition and evidence shows strong ties to that tradition. Traits described are Watson Cordmarked and Mahoning Ware pottery, corner-notched points (some of which are comparable to the Chesser Notched type), flake knives, Flint Ridge lithics, and stone-lined burials in mounds (Maslowski, 1985:26; Dragoo, 1956:73). Support of the southwestern Pennsylvania Middle Woodland relationship with Watson comes from the association of a Raccoon Notched pentagonal with a Chesser Notched type at Pollocks Hill Mound (Cadzow, 1933:16). It is suggested that Bennington Corner Notched and triangular points became part of the Watson tradition sometime after its development from a Hopewellian-like base, the Fairchance phase, as described by Hemmings (1984:47). A Bennington Corner Notched point was found in association with a burial at the Avella Mound in Washington County, Pennsylvania, and dated at A.D. 790 ± 110 years (Applegarth and Cowin, 1982:254). Although no ceramics were found at the Avella Mound, the excavator believes the structure was associated with the Watson tradition (Verna Cowin, personal communication, 1987).

The Buck Garden Culture of central West Virginia evidences an association of triangular points with expanding-stemmed points including Chesser Notched. Ceramics are similar to Watson Ware (Maslowski, 1985:27) and it is possible that triangular points may be part of the Watson tradition. Another connection with the Buck Garden Culture can be noted in the similarities of the Bennington Corner Notched form to a point illustrated by McMichael (1968:Fig. 28h). Similar forms are also seen in the Peters phase of southeastern Ohio where dates range from A.D. 500 to A.D. 800 (Prufer and McKenzie, 1966:247–248; Seeman, 1980:13). Peters phase and Newton focus diagnostics include Chesser Notched points and pentagonal knives.

In west central Pennsylvania, the Raccoon Notched point and associated materials seem most closely aligned with the Intrusive Mound Culture of Ohio or a similar culture as yet undefined. Mahoning ceramics are similar to the Intrusive Mound types (Johnson et al., 1979:83), and Raccoon Notched and triangular points of exotic flints, pendants, and the keeled-base platform pipe are diagnostic of the Intrusive Mound Culture.

Before A.D. 500, west central Pennsylvania was within the Hopewell Interaction Sphere as defined by Seeman (1979), and evidenced by artifacts from the Chambers Mound (36 LR 11), the Morrow site

(36 LR 5), and the Boarts site (36 LR 36). The area appears to be a pathway of Hopewellian influence into the upper Allegheny.

Since systematic research-oriented archaeological excavations of Middle Woodland village sites are lacking, any synthesis of occupations between A.D. 500 and A.D. 950 must rely on available data. Carpenter's survey in the 1940s focused on the more obvious prehistoric burial mounds of the Upper Ohio Valley. Excavations resulting from Carpenter's survey concentrated in areas above the then-proposed Kinzua Dam. The majority of the mounds excavated and reported are now destroyed and many of the unexcavated, associated Middle Woodland village sites were either destroyed by gravel mining operations or inundated after the completion of the Kinzua Dam and the filling of the Allegheny Reservoir. Few known major Middle Woodland village sites remain in western Pennsylvania because they tend to be located on or near large floodplains and glacial outwash terraces already bisected by railroads or highways. Many choice site locations have been altered by flood control projects, housing developments, surface mineral exploitation, and industrialization.

The loss of the villages is further complicated by a lack of records on the full range of upland sites. These locations tend to be small hamlets or special function stations. While these resources may be extant, many are in remote wooded and uncultivated locations.

Utilizing available data, this exercise has shown that Hopewell interaction with Middle Woodland groups in western Pennsylvania and western New York diminished during the period when the Raccoon Notched Point Assemblage was being utilized. Whereas Middle Woodland Regional Centers may once have participated in major trade networks, after burial ceremonialism declined, they became more localized and relied on their advantageous locations and their satellite sites for the raw materials and the subsistence resources needed to support resident and itinerent Middle Woodland populations. Only in the west central area of Pennsylvania did the ties to Ohio remain somewhat intact, and there geography and the proximity of lithic resources may have played a more important role than did actual cultural contact. In the west central zone, the exotic lithic sources were close enough to have been tapped as part of a routine procurement strategy.

In northwestern Pennsylvania and western New York, one does not have to look for major, outside, cultural influences to find roots for what follows in the Late Woodland period. These roots were fully established in a cultural continuum from at least Middle Woodland time.

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APPENDIX I

Measurements in centimeters; AL = Artifact Listing; L = Length; W = Width; BW = Base Width; SW = Shoulder Width; MT = Maximum Thickness; BT = Base Thickness; DN = Depth of Notch; SL = Stem Length; BL = Blade Length; Wt = Weight (in grams); LM = Lithic Material; SN = Site Number; C = Collector; Inc = Incomplete. Artifact Collector abbreviated as follows: A = Alam, B = Buker, S = Stuart, Z = Zavinski. Lithic material utilized (flint type and source) abbreviated as follows: O = Onondaga (Glacial)—Pennsylvania, New York, Ohio, Ontario; C = Upper Mercer—Coshocton Co., Ohio; D = Delaware (Onondaga)—Pennsylvania, New York, Ohio, Ontario; F = Vanport (Flint Ridge)—Licking Co., Ohio.

Raccoon Side Notched Points with Excurvate Blades

TYPE 1

AL	L	W	BW	SW	MT	BT	DN	SL	BL	Wt	LM	SN	C
1	3.4	2.1	2.0	2.2	0.4	0.3	0.4	0.9	2.5	Inc	O	36WA99	S
2	4.0	2.0	1.4	1.9	0.4	0.2	0.4	0.7	3.3	Inc	O	36WA102	S
3	4.0	2.1	2.0	2.0	0.3	0.3	0.4	0.9	3.1	Inc	O	36WA31	S
4	4.2	2.2	1.9	1.9	0.4	0.3	0.4	0.7	3.5	Inc	D	36WA31	S
5	4.0	2.2	1.9	2.2	0.5	0.2	0.4	0.7	3.3	Inc	C	36WA29	S
6	4.2	2.3	2.1	2.2	0.4	0.3	0.5	1.2	3.0	Inc	O	36WA98	S
7	4.3	2.2	1.9	2.1	0.5	0.3	0.4	1.0	3.3	Inc	O	36WA98	S
8	4.1	2.2	1.8	2.2	0.4	0.2	0.4	0.8	3.3	Inc	O	36WA96	S
9	3.9	2.4	1.8	2.4	0.5	0.3	0.5	0.9	3.0	Inc	O	36WA98	S
10	4.3	2.2	1.9	2.4	0.5	0.3	0.4	0.9	3.4	Inc	O	36WA29	S
11	3.4	1.9	1.4	1.9	0.5	0.3	0.4	0.9	2.5	3.3	O	36WA29	Z
12	3.2	2.0	1.8	2.0	0.3	0.2	0.5	0.9	2.3	Inc	D	36WA97	S
13	4.9	2.8	2.2	2.5	0.4	0.3	0.6	1.0	3.9	Inc	O	36WA99	Z
14	3.6	1.8	1.7	1.9	0.3	0.2	0.4	0.9	2.7	Inc	O	36WA99	Z
15	3.8	2.1	1.9	2.1	0.4	0.3	0.4	0.9	2.9	Inc	C	36WA99	Z
16	3.7	2.1	2.0	2.1	0.4	0.2	0.5	0.9	2.8	Inc	O	36WA99	S
17	3.3	1.8	1.5	1.8	0.4	0.3	0.4	0.8	2.5	Inc	O	36WA99	Z
18	3.0	1.6	1.4	1.5	0.3	0.2	0.3	0.8	2.2	Inc	O	36WA98	S
19	2.4	1.8	2.0	1.8	0.4	0.3	0.3	0.9	1.5	2.2	O	36WA98	S
20	3.0	1.8	1.9	1.8	0.5	0.3	0.4	0.9	2.1	3.0	O	36WA98	S
21	3.2	1.8	1.4	1.7	0.4	0.2	0.3	0.6	2.6	2.3	D	36WA99	Z
22	3.6	1.6	1.6	1.6	0.4	0.2	0.4	0.7	2.9	2.8	O	36WA99	Z
23	3.1	2.7	2.6	2.5	0.5	0.4	0.4	0.9	2.2	5.5	C	36BV24	A
24	3.8	2.2	2.2	2.3	0.4	0.2	0.5	0.9	2.9	Inc	C	36BV9	A
25	5.0	2.4	2.1	2.3	0.4	0.3	0.4	0.9	4.1	Inc	C	36BV24	A
26	3.5	2.2	2.0	2.2	0.4	0.3	0.4	0.9	2.6	Inc	F	33LI—	A
27	4.2	2.2	1.9	2.0	0.5	0.2	0.4	0.9	3.3	3.8	O	36BV6	A
28	2.8	2.0	1.8	2.0	0.3	0.2	0.4	0.9	1.9	2.0	D	36BV24	A
29	2.8	2.2	2.1	2.2	0.4	0.3	0.4	0.8	2.0	2.2	F	36BV24	A
30	3.6	2.4	2.5	2.4	0.4	0.3	0.4	0.9	2.7	3.6	O	36BV20	A
31	2.7	2.0	1.9	2.0	0.4	0.3	0.4	0.9	1.8	2.3	O	36BV24	A
32	3.3	2.2	2.1	2.1	0.5	0.3	0.5	0.8	2.5	3.2	?	36BV24	A
33	3.1	1.7	1.8	1.7	0.6	0.4	0.4	1.0	2.1	3.2	O	36BV4	A
34	2.5	1.8	1.4	1.8	0.4	0.3	0.3	0.8	1.7	1.6	D	36BV24	A
35	3.8	1.8	1.6	1.8	0.4	0.2	0.5	0.8	3.0	2.6	F	C-33MU34	B
36	3.0	2.0	2.0	2.0	0.4	0.2	0.4	0.7	2.3	2.9	O	36WA99	Z
Averages:													
	3.6	2.1	1.9	2.0	0.42	0.27	0.41	0.86	2.6	2.9			

3.2 is the average length of complete points.

Raccoon Corner Notched Points with Excurvate Blades

TYPE 2

AL	L	W	BW	SW	MT	BT	DN	SL	BL	Wt	LM	SN	C
1	3.2	2.2	1.8	2.3	0.4	0.2	0.5	0.8	2.4	2.6	C	46HK6	A
2	2.7	2.6	2.3	2.6	0.4	0.3	0.5	0.8	1.9	2.8	C	33AL61	B
3	3.2	2.6	2.4	2.6	0.6	0.3	0.7	0.9	2.3	4.6	C	C-33MU34	B
4	3.3	2.7	2.4	2.7	0.5	0.3	0.6	0.9	2.4	4.2	C	C-33MU34	B

APPENDIX I—*Continued.*

Raccoon Corner Notched Points with Excurvate Blades

TYPE 2

AL	L	W	BW	SW	MT	BT	DN	SL	BL	Wt	LM	SN	C
5	2.7	2.5	2.0	2.5	0.4	0.2	0.5	0.9	1.8	2.9	C	C-33MU34	B
6	4.6	2.7	2.5	2.8	0.4	0.2	0.6	0.9	3.7	6.6	C	C-33MU34	B
7	4.7	2.5	1.8	2.5	0.4	0.2	0.5	0.9	3.8	Inc	C	C-33MU34	B
8	3.2	2.6	1.7	2.6	0.5	0.3	0.4	0.8	2.4	3.8	O	36BV23	A
9	4.2	2.7	2.2	2.7	0.4	0.3	0.4	1.0	3.2	6.0	C	36BV25	A
10	4.7	2.4	1.9	2.3	0.4	0.2	0.5	0.9	3.8	Inc	C	36BV20	A
11	4.2	2.2	1.8	2.2	0.4	0.2	0.5	1.0	3.2	Inc	C	36BV25	A
12	4.3	2.5	2.2	2.5	0.5	0.2	0.4	1.0	3.3	Inc	C	36BV11	A
13	4.8	2.5	2.2	2.5	0.4	0.2	0.7	0.9	3.9	Inc	C	36BV25	A
14	3.8	2.2	1.5	2.2	0.4	0.2	0.5	0.8	3.0	3.0	O	36WA98	S
15	3.2	2.3	2.2	2.3	0.5	0.3	0.6	1.0	2.2	3.7	O	36WA98	S
16	2.4	2.0	1.7	2.0	0.5	0.3	0.3	0.7	1.7	2.0	D	36WA99	Z
17	3.2	2.0	1.8	2.0	0.4	0.2	0.5	0.8	2.4	3.1	O	36WA99	Z
18	2.5	2.0	1.7	2.0	0.4	0.3	0.5	1.0	1.5	2.3	O	36WA98	S
19	4.2	2.9	1.9	2.9	0.4	0.3	0.5	0.9	3.3	6.0	O	36WA94	Z
20	3.7	2.3	2.2	2.3	0.4	0.2	0.6	0.9	2.8	Inc	O	36WA99	Z
21	3.9	2.5	2.0	2.2	0.5	0.2	0.6	0.9	1.6	Inc	O	36WA99	Z
22	4.1	2.7	1.8	2.3	0.4	0.2	0.4	1.0	3.1	Inc	O	36WA95	Z
23	4.1	2.1	1.7	2.1	0.4	0.2	0.5	1.0	3.1	Inc	O	36WA99	Z
24	4.3	2.5	2.0	2.4	0.4	0.3	0.6	0.7	3.7	Inc	C	C-33MU34	B
25	3.2	2.4	1.8	2.4	0.4	0.2	0.5	0.7	2.5	Inc	F	C-33MU34	B
Averages:													
	3.8	2.4	2.0	2.4	0.43	0.22	0.52	0.88	2.7	3.7			

3.3 is the average length of complete points.

Raccoon Pentagonal Side Notched Points

TYPE 3

AL	L	W	BW	SW	MT	BT	DN	SL	BL	Wt	LM	SN	C
1	3.8	2.2	1.9	2.2	0.5	0.3	0.4	0.9	2.9	Inc	O	36WA31	S
2	3.5	2.2	2.0	2.2	0.4	0.3	0.5	0.8	2.1	Inc	O	36WA29	S
3	3.5	2.2	1.9	2.2	0.5	0.3	0.5	0.9	2.6	3.8	D	36WA98	S
4	2.5	2.0	1.6	2.0	0.3	0.2	0.4	0.7	1.8	1.4	O	36WA99	Z
5	2.5	2.3	2.0	2.3	0.5	0.3	0.5	0.7	1.8	2.5	O	36WA96	S
6	2.2	2.2	1.8	2.2	0.4	0.2	0.5	0.7	1.5	1.6	O	36BV24	A
7	3.1	2.6	2.3	2.5	0.4	0.3	0.5	1.1	2.0	3.3	C	46HK6	A
8	2.8	1.9	1.8	1.9	0.5	0.2	0.3	0.8	2.0	2.2	C	36BV24	A
9	3.2	2.2	2.0	2.2	0.4	0.2	0.5	1.0	2.2	3.0	D	36BV24	A
10	2.2	1.9	2.2	1.9	0.4	0.3	0.4	0.7	1.5	2.0	C	36BV24	A
11	2.9	2.1	2.2	2.1	0.4	0.3	0.3	0.8	2.1	2.8	C	C-33MU34	B
12	2.9	1.8	1.8	1.9	0.4	0.2	0.4	0.7	2.2	2.3	C	C-33MU34	B
13	2.5	1.8	1.8	1.8	0.4	0.2	0.4	0.8	1.7	1.7	O	36WA99	Z
14	2.9	2.2	2.4	2.2	0.4	0.2	0.4	0.9	2.0	2.5	F	C-33MU34	B
15	2.9	2.5	2.0	2.3	0.5	0.2	0.4	1.1	1.8	3.3	O	36AL16	B
Averages:													
	2.9	2.1	2.0	2.1	0.4	0.25	0.4	0.84	2.0	2.2			

2.8 is the average length of complete points.

Raccoon Pentagonal Corner Notched Points

TYPE 4

AL	L	W	BW	SW	MT	BT	DN	SL	BL	Wt	LM	SN	C
1	2.9	2.3	1.6	2.3	0.5	0.3	0.5	0.7	2.2	3.7	O	36BV24	A
2	2.5	3.0	2.4	3.0	0.5	0.2	0.6	0.8	1.7	3.9	C	46HK34	A
3	3.8	2.8	2.4	2.9	0.4	0.2	0.7	0.9	2.9	4.9	C	33LI—	A
4	2.0	1.8	1.3	1.7	0.4	0.2	0.4	0.7	1.3	1.5	O	36WA95	Z

APPENDIX I—*Continued.*

Raccoon Pentagonal Corner Notched Points

TYPE 4

AL	L	W	BW	SW	MT	BT	DN	SL	BL	Wt	LM	SN	C
5	3.9	2.3	1.9	2.3	0.4	0.2	0.5	0.8	3.1	Inc	C	36BV111	A
6	2.1	2.0	1.8	2.2	0.41	0.2	0.5	0.7	1.4	1.6	C	36BV4	A
7	3.0	2.0	1.9	2.3	0.55	0.21	0.35	0.7	2.3	Inc	O	36WA99	Z
8	3.1	2.0	2.0	2.3	0.5	0.3	0.4	0.8	2.3	Inc	O	36WA99	Z
Averages:													
	2.9	2.3	1.9	2.4	0.46	0.23	0.49	0.76	2.2	3.1			

2.7 is the average length of complete points.

Raccoon Side and Corner Notched Points on Straight Blades

TYPE 5

AL	L	W	BW	SW	MT	BT	DN	SL	BL	Wt	LM	SN	C
1	2.8	2.0	2.2	2.0	0.5	0.3	0.5	0.8	2.0	2.0	O	36WA99	Z
2	2.2	2.0	1.9	2.0	0.4	0.3	0.4	0.7	1.5	1.8	O	36WA90	S
3	2.5	1.8	2.0	1.8	0.4	0.2	0.4	0.7	1.8	2.0	O	36WA29	S
4	3.5	1.7	1.9	1.7	0.4	0.2	0.2	0.7	2.8	2.6	F	36BV24	A
5	1.7	2.0	1.7	2.0	0.4	0.3	0.3	0.8	0.9	2.1	C	36BV24	A
6	2.4	1.9	2.1	1.9	0.3	0.2	0.3	0.7	1.7	Inc	C	36BV24	A
7	2.5	2.0	2.1	2.0	0.4	0.2	0.4	0.6	1.9	2.1	O	36BV25	A
8	3.2	2.3	2.1	2.3	0.5	0.2	0.5	0.8	2.4	3.3	O	36WA31	S
Averages:													
	2.6	2.0	2.0	2.0	0.41	0.23	0.38	0.72	1.9	2.3			

2.6 is the average length of complete points.

Strike-A-Lights

AL	L	W	BW	SW	MT	BT	DN	SL	BL	Wt	LM	SN	C
1	2.2	2.3	2.0	2.1	0.7	0.4	0.2	0.8	1.4	3.0	O	36WA99	Z
2	2.2	1.8	2.1	1.8	0.6	0.3	0.3	1.1	1.1	2.3	O	36WA99	Z
3	1.8	1.6	2.1	1.8	0.4	0.2	0.3	0.8	1.0	1.8	O	36BV24	A
4	2.0	1.7	1.5	1.7	0.5	0.3	0.3	0.7	1.0	1.8	O	36WA98	S
5	2.2	1.7	1.8	1.7	0.5	0.3	0.3	0.8	1.4	2.3	O	36WA98	S
6	2.0	1.8	1.5	1.8	0.55	0.4	0.3	1.2	1.4	2.0	O	36WA99	Z
7	1.5	2.0	1.6	2.0	0.4	0.29	0.4	0.9	0.6	1.3	O	36WA29	S
8	1.9	2.3	2.1	2.3	0.5	0.4	0.4	0.8	1.1	Inc	O	36WA99	Z
Averages:													
	1.98	1.9	1.84	1.9	0.52	0.32	0.31	0.89	1.13	2.07			

2.0 is the average length of complete strike-a-lights.

End Scraper

AL	L	W	BW	SW	MT	BT	DN	SL	BL	Wt	LM	SN	C
1	2.3	1.8	1.5	1.7	0.4	0.3	0.3	1.0	1.3	2.0	O	36WA99	Z
2	2.5	2.2	2.1	2.0	0.6	0.3	0.5	1.1	1.4	3.3	O	36BV9	A
3	2.1	1.6	1.1	1.5	0.4	0.3	0.2	0.7	1.4	1.5	O	36WA98	S
4	2.0	2.1	2.0	2.1	0.4	0.3	0.4	1.0	1.0	2.0	O	36BV24	A
5	2.0	1.7	1.9	1.9	0.4	0.3	0.3	0.8	1.2	1.5	O	36BV24	A
Averages:													
	2.2	1.9	1.7	1.8	0.45	0.3	0.34	0.92	1.3	2.1			

APPENDIX II

Middle Woodland Site Survey Within 24 Upper Ohio Valley Counties in New York and Pennsylvania

General Recapitulation of Information

502 sites are Middle Woodland.
160 sites have triangular points and Raccoon Notched points.
66 sites have only Raccoon Notched points.
65 mounds are in western Pennsylvania.
12 mounds are in western New York.
39 sites have Bennington Corner Notched points.
21 sites have Bennington and triangular points.
19 sites have Bennington and Raccoon Notched points.
12 sites have Bennington, triangular, and Raccoon Notched points.
236 sites have Raccoon Notched points.
212 sites have triangular points.
6 sites have Garvers Ferry Corner Notched points.
8 sites have Kiski Notched points.
6 sites have Murphys Stemmed points.
5 sites have Garvers Ferry and Kiski Notched points.
2 sites have Garvers Ferry and Murphys Stemmed points.
5 sites have Kiski Notched and Murphys Stemmed points.
2 sites have Kiski Notched, Garvers Ferry and Murphys Stemmed points.

Mounds and Total Number of Sites Listed by Counties

No.	County	Abbr.	No. of Mounds	No. of Sites
1	Allegheny	AL	6	19
2	Armstrong	AR	1	24
3	Beaver	BV	2	34
4	Butler	BT	1	19
5	Cambria	CB	0	3
6	Cattaraugus, NY	CA	6	22
7	Chautauqua, NY	CH	6	20
8	Clarion	CL	0	10
9	Crawford	CW	2	30
10	Elk	EL	0	1
11	Erie	ER	4	22
12	Fayette	FA	1	9
13	Forest	FO	0	3
14	Greene	GR	2	25
15	Indiana	IN	0	29
16	Jefferson	JE	0	6
17	Lawrence	LR	4	9
18	McKean	MC	1	1
19	Mercer	ME	1	11
20	Somerset	SO	0	6
21	Venango	VE	0	15
22	Warren	WA	17	24
23	Washington	WH	19	47
24	Westmoreland	WM	4	113
		Totals	77	502

Abbreviations

RN = Raccoon Notched, TP = Triangular Points, BP = Bennington Points, M = Mounds, GF = Garvers Ferry, KN = Kiski Notched, MS = Murphys Stemmed, X = Occurrence, XX = Heavy Concentration.

Major Raccoon Notched Point Sites Within 24 Upper Ohio Valley Counties in New York and Pennsylvania

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
36ER31	Melnick #1	Waterford	XX	X					
36ER181	Melnick #2	Waterford	XX	X					
30CA70	Zawatski #2	Salamanca	XX	X					

APPENDIX II—*Continued*

Major Raccoon Notched Point Sites Within 24 Upper Ohio Valley Counties in New York and Pennsylvania

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
30CA93	Zawatski #23	Salamanca	XX	X					
C-30CA25	Kipp Island	Steamburg	XX	X					
C-30CH9	Kiantone	Jamestown	XX	X					
C-30CH25	Bemus Point	Chautauqua	XX	X					
36WA99	Buckaloons #10	Youngsville	XX	X					
36WA98	Buckaloons #9	Youngsville	XX	X					
36WA87	Harrington #2	Youngsville	XX	X					
36LR3	Edinburg	Edinburg	XX	X					
36LR21	Batinger	Edinburg	XX	X					
36BV24	Outdoor Theater	Aliquippa	XX	X	X				
36FA217	Stanish	Uniontown	XX	X					
36IN177	Elkin #4	Clymer	XX	X					
36WH921	Cowden #2	Prosperity	XX		X				
36LR102	Ashton Cemetery	Edinburg	XX	X					
		Total 17							

Sites Having Garvers Ferry Corner Notched, Kiski Notched, and Murphys Stemmed Points

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
36AL19	Blawnox	Braddock		X			X	X	
36AR129	Murphy's Old House	Freeport					X	X	X
36AR19	Rosston	Leechburg					X	X	
36AR20	Heilman	Leechburg						X	X
36BV24	Outdoor Theater	Aliquippa	X	X	X		X	X	
36BV68	Coble Farm	Midland			X		X	X	X
36WM140	Thomas Orr	Greensburg						X	X
36WM23	Ryan	Slickville						X	X
36WM30	Garvers Ferry	Freeport					X		
36VE11	Franklin Point	Franklin		X					X
		Total 10							

Sites Having the Bennington Corner Notched Point and Other Associated Points

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
36BV24	Outdoor Theater	Aliquippa	X	X	X		X	X	
36GR73	Biel #2	Mather		X	X				
36GR116	Hillman Land Co.	Mather			X				
36GR148	Whitlatch #3	Rogersville		X	X				
36GR160	Throckmorton #1	Rogersville		X	X				
36GR114	Heath Cliff (Crouse)	Waynesburg		X	X				
36WH825	Stopka #2	Ellsworth	X	X	X				
36WH796	Curtis McGaughey #2	Washington W.	X		X				
36WH786	Kiger #2	Ellsworth	X	X	X				
36WH798	Weaver Miles	Ellsworth	X	X	X				
36WH809	Shidler #1	Ellsworth	X	X	X				
36WH813	Shidler Village	Ellsworth	X	X	X				
36WH764	W. Dunn #34	Ellsworth			X				
36WH767	Fitzwater #28	Ellsworth			X				
36WH770	Gialata	Ellsworth			X				
36WH782	Howard M. Keys	Ellsworth	X	X	X				
36WH785	Kiger #1	Ellsworth	X	X	X				
36WH810	Shidler #2	Ellsworth	X	X	X				
36WH829	Ulery #4	Ellsworth	X		X				
36WH824	Stopka #1	Ellsworth	X	X	X				
36WH744	Bennett 27 #1	Ellsworth			X				
36WH443	Myles Site	Ellsworth			X				
36WH873	Chaffon #1	Amity		X	X				
36WH1044	Chaffon #2	Amity			X				

APPENDIX II—*Continued*

Sites Having the Bennington Corner Notched Point and Other Associated Points

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
36WH1045	Chaffon #3	Amity			X				
36WH351	M. S. #41	W. Middletown		X	X				
36WH844	Mike Krajacic	W. Middletown		X	X				
36WH438	Bennington #1	Ellsworth		X	X				
36WH763	Rollo Dunn	Ellsworth		X	X				
36WH921	Cowden #2	Prosperity	XX		X				
36WH922	Robert Dunn	Prosperity			X				
36WH473	Krajacic Camp	W. Middletown	X		X				
36WH741	Bamberger #1	Amity	X	X	X				
36WH742	Bamberger #2	Amity	X	X	X				
36WH853	Taggert (Helsel #2)	Washington W.	X		X				
36WH662	Krajacic	W. Middletown			X				
36WH11	Smith Farm	Amity	X		X				
36WH943	McGaughey #2	W. Middletown	X		X				
36GR171	Rosemont Cemetery	Rogersville			X				
		Total 39 sites							

Middle Woodland Sites Listed by Counties Within the Upper Ohio Valley in New York and Pennsylvania

Allegheny County, Pennsylvania

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
36AL6	McKees Rocks (Mound)	Pittsburgh W.		X		X			
36AL19	Blawnox	Braddock	X	X			X		
36AL28	Bridgeville (Mound)	Bridgeville				X			
36AL50	Freed #2	Bridgeville	X						
36AL64	Crestoff Farm	Bridgeville	X	X					
36AL33	Guffey	Donora	X	X					
36AL43	Covert	Pittsburgh E.	X	X					
36AL61	Upper Leetsdale	Ambridge		X					
36AL259	Old Scout Camp	Ambridge	X						
36AL7	Leetsdale	Ambridge	X	X					
36AL47	Forward School	Monongahela	X	X					
36AL158	Kloiber	Baden	X	X					
36AL202	Bear Run	Emsworth	X						
36AL153	Williams	Glassport	X						
36AL69	Linhart	Glassport	X	X					
36AL96	Anderson Mound	New Kensington W.	X			X			
36AL272	Darlington Mound	Pittsburgh E.				X			
36AL83	Oakmont Mound	New Kensington W.				X			
36AL271	Peter Creek Mound	Glassport				X			
		Totals: 19 sites	13	10	0	6	1	0	0

Armstrong County, Pennsylvania

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
36AR4	Murphys Bottom	Freeport		X					
36AR9	Armstrong Run	Rimersburg	X						
36AR23	Martin	Distant							
36AR41	Smeltzer	Rural Valley	X	X					
36AR68	Bohan	Rural Valley							
36AR70	Bachlor	Mosgrove							
36AR95	Taxes	Worthington		X					
36AR105	Worthington	Worthington		X					
36AR119	Wattersonville (Mound)	East Brady	X	X		X			
36AR136	Hogg	Worthington	X						
36AR140	Rural Valley #1	Rural Valley		X					

APPENDIX II—*Continued*

Armstrong County, Pennsylvania

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
36AR142	Wilson	Rural Valley	X	X					
36AR145	Fleming	Rural Valley	X	X					
36AR148	Boyer I	Rural Valley	X						
36AR150	Bohan	Rural Valley							
36AR162	Croyle Farm	Elderton		X					
36AR183	Smeltzer	Rural Valley		X					
36AR199	West Ford	Kittanning							
36AR208	Bark #5	Elderton	X	X					
36AR221	G. Kimmel #5	Elderton	X	X					
36AR146	Coulter	Rural Valley		X					
36AR129	Murphy's Old House	Freeport					X	X	X
36AR19	Rosston	Leechburg					X	X	
36AR20	Heilman	Leechburg						X	X
		Totals: 24 sites	9	13	0	1	2	3	2

Beaver County, Pennsylvania

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
36BV2	Vanport	Beaver	X	X					
36BV24	Outdoor Theater	Aliquippa	XX	X	X		X	X	
36BV23	Hills Plaza	Aliquippa	X	X					
36BV26	Kochanioski	Aliquippa	X	X					
36BV28	Camp	Zelienople	X						
36BV37	Wassler #3	Aliquippa							
36BV39	McMichaels	Aliquippa	X	X					
36BV50	New Barn	Beaver							
36BV59	Truck Farm	Beaver	X						
36BV68	Coble Farm	Midland					X	X	X
36BV70	Rossomme	Midland							
36BV77	Darlington Lake	New Galilee							
36BV78	Parish Farm	Aliquippa	X	X					
36BV88	Murdocksville	Clinton							
36BV111	South Service Creek	Aliquippa	X						
36BV118	Muntzel	Aliquippa	X						
36BV137	Toogood Site	Clinton							
36BV144	Upper Georgetown	Midland	X	X					
36BV158	Clyde	Zelienople	X						
36BV160	Plaza West	Aliquippa	X	X					
36BV176	Muntzel #3	Aliquippa							
36BV180	Belich Farm	Aliquippa	X	X					
36BV195	Feyke Field	New Galilee	X						
36BV197	Veon	New Galilee							
C-36BV243	Brick Kiln Overlook	Beaver	X						
36BV60	Phillis Island	Hookstown	X	X					
36BV6	Glasgow	E. Liverpool	X	X					
36BV13	Circle	Aliquippa	X						
36BV20	Wilson Triangle	Aliquippa	X	X					
36BV64	D. C. Bonzo	Baden	X	X					
36BV9	Ohioview	Midland	X	X		X			
36BV25	Dead End	Aliquippa	X	X					
C-36BV229	Crucible Steel	Hookstown	X	X					
C-36BV250	Stone House Mound	Midland				X			
		Totals: 34 sites	24	16	1	2	2	2	1

Butler County, Pennsylvania

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
36BT13	Hartman Lake	Evans City							
36BT78	Stamm School	Evans City	X						

APPENDIX II—*Continued*

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
36BT105	Grote Site	Evans City	X						
36BT16	John Nesbitt	Zelienople							
36BT17	David Nesbitt	Zelienople	X						
36BT23	Dutilh	Mars	X						
36BT110	Strawberry Run	Mars							
36BT25	Old McCoy	Slippery Rock	X						
36BT82	College Site	Slippery Rock		X					
C-36BT177	Hogg	Slippery Rock	X						
36BT72	Love Site	Valencia	X	X					
366BT109	Harvey Strain	Valenica							
36BT112	Sewage Plant	Baden	X						
36BT118	Radio Tower	West Sunbury	X						
36BT139	Jones #4	Saxonburg							
36BT141	Wiley (A)	Saxonburg							
36BT156	Szebalski #1	Curtisville		X					
36BT161	Schilling #1	Butler		X					
C-36BT184	Airport Mound	Butler				X			
		Totals: 19 sites	9	4	0	1	0	0	0

Cambria County, Pennsylvania

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
36CB3	Settlemeyer #2	Ebensburg		X					
36CB6	Dalton Run	Rachelwood							
36CB141	Topper Farm	Geistown	X						
		Totals: 3 sites	1	1	0	0	0	0	0

Cattaraugus County, New York

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
30CA70	Zawatski #2	Salamanca	XX	X					
30CA74	Zawatski #6	Salamanca	X	X					
30CA93	Zawatski #23	Salamanca	XX	X					
30CA10	Cold Spring	Red House	X	X		X			
30CA25	Kipp Island	Steamburg	XX	X					
30CA107	State Line Run	Steamburg	X	X					
30CA73	Killbuck Mound	Salamanca				X			
30CA68	Gerry Johnson	Steamburg	X	X					
30CA12	Cold Spring #1	Red House		X					
30CA44	Twin Bridge	Red House	X	X					
30CA30	Sawmill Run	Steamburg	X	X					
30CA100	Sawmill Run South	Steamburg				X			
30CA6	Quaker Bridge	Steamburg	X	X					
30CA26	Quaker Run South	Steamburg	X	X					
30CA67	Mound Site	Randolph				X			
30CA34	Onoville Store	Steamburg	X	X					
30CA32	Orth Site	Steamburg	X	X					
30CA29	Dick Rapp	Steamburg		X					
30CA27	Knob Hill	Steamburg	X	X					
30CA9	Old Town Road	Steamburg	X						
30CA115	Vandalia Mound #1	Knapp Creek				X			
30CA116	Vandalia Mound #2	Knapp Creek				X			
		Totals: 22 sites	15	16	0	6	0	0	0

Chautauqua County, New York

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
C-30CH8	Kiantone I	Jamestown	X	X					
C-30CH9	Kiantone II	Jamestown	XX	X					

APPENDIX II—*Continued*

Chautauqua County, New York

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
C-30CH25	Bemus Point	Chautauqua	XX	X		X			
C-30CH27	Mound Site	Chautauqua				X			
C-30CH43	Bonnybrook	Chautauqua	X	X					
C-30CH48	Prendergast Point	Chautauqua	X	X					
C-30CH46	Power Boat Site	Chautauqua		X					
C-30CH35	Goose Creek	Lakewood							
C-30CH34	Loomis Garden	Lakewood							
C-30CH38	Ashville Bay	Lakewood							
C-30CH72	Carlson I	Lakewood							
C-30CH52	Johnson II	Cassadaga		X					
C-30CH53	Johnson III	Cassadaga							
C-30CH59	Ames	Cassadaga		X					
C-30CH78	Anderson Farm	Kennedy	X	X					
C-30CH85	Poland Center Mound	Gerry				X			
C-30CH86	Poland Village	Gerry							
C-30CH87	Morton Mound	Panama				X			
C-30CH88	Whitney's Mound	Chautauqua				X			
C-30CH89	Billing's Mound	Chautauqua				X			
		Totals: 20 sites	6	9	0	6	0	0	0

Clarion County, Pennsylvania

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
36CL33	McFarland Site	Rimersburg		X					
36CL34	Wilson Site #1	Rimersburg							
36CL38	Bullock's Crossing	Knox	X						
36CL42	Licking Creek	Rimersburg	X	X					
36CL47	Simpson Site #3	Knox	X						
36CL50	Wheeter Site	Rimersburg	X	X					
36CL51	Lobaugh Site	Knox	X						
36CL54	Courson Site	Rimersburg							
36CL92	Cherico Site	New Bethlehem							
36CL66	Slaugenhaup Site	Rimersburg		X					
		Totals: 10 sites	5	4	0	0	0	0	0

Crawford County, Pennsylvania

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
36CW4	Danner Mound	Lake Canadohta				X			
36CW21	Propagation #57	Geneva							
36CW9	Kebort	Geneva							
36CW162	Hotson Farm A	Geneva	X	X					
36CW248	Peterson #5	Geneva							
36CW259	Mook #1 & 2	Geneva	X						
36CW48	Brooks	Linesville							
36CW81	Steward—G	Linesville	X						
36CW91	Jablonski—B	Linesville							
36CW92	Bartges—A	Linesville	X	X					
36CW93	Zigafoose	Linesville							
36CW98	Gillette—B	Linesville	X	X					
36CW100	Ford Island	Linesville							
36CW6	Manny Threuret	Meadville							
36CW7	Hilgendorf Dairy	Meadville							
36CW173	Hall Farm #1	Meadville	X						
36CW175	Hall Farm #2	Meadville	X						
36CW104	Patterson	Hartstown	X						
36CW112	Bounded Site	Harmonsburg		X					
36CW115	Classic	Harmonsburg							

APPENDIX 11—*Continued*

Crawford County, Pennsylvania

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
36CW118	Harvey—A	Cochranton	X						
36CW119	Harvey—B	Cochranton	X						
36CW120	Harvey—C	Cochranton	X						
36CW125	Custead—J	Cochranton	X	X					
36CW144	Hall #8	Cochranton	X	X					
36CW146	Hall #6	Cochranton							
36CW229	Preston #1	Cochranton							
36CW58	Nelson Mound	Cochranton				X			
C-36CW351	McEntire	Conneaut Lake	X						
36CW324	Burkett CB 22	Conneaut Lake	X						
		Totals: 30 sites	15	6	0	2	0	0	0

Elk County, Pennsylvania

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
36EL39	Medix Run	Weedville							
		Totals: 1 site	0	0	0	0	0	0	0

Erie County, Pennsylvania

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
36ER30	Nelson	Waterford	X	X					
36ER31	Melnick #1	Waterford	XX	X					
36ER32	Boleratz II	Waterford	X	X					
36ER33	Lewis I Site	Waterford	X	X					
36ER19	Boleratz I	Waterford	X	X					
36ER24	Perry Troyer Site	Waterford	X	X					
36ER26	Wise Mound	Waterford				X			
36ER34	Wheeler Site	Waterford		X					
36ER48	Indian Head Mound	Waterford				X			
36ER96	Wheeler Cache Site	Waterford							
36ER181	Melnick #2	Waterford	XX	X					
36ER182	Kingen #1	Waterford	X	X					
36ER185	Kingen #4	Waterford	X	X					
36ER186	Kingen #5	Waterford	X	X					
36ER187	Kingen #6	Waterford	X	X					
36ER195	Dollar #4	Waterford	X	X					
36ER196	Dollar #5	Waterford	X	X					
36ER198	Dollar #7	Waterford	X	X					
36ER203	Port #1	Waterford	X	X					
36ER207	Graham #1	Union City	X	X					
C-6ER220	Mystic Mound	Millers Station				X			
36ER16	Clouna Mound	Spartansburg				X			
		Totals: 22 sites	16	17	0	4	0	0	0

Fayette County, Pennsylvania

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
36FA51	Horse Shoe Bend	Confluence							
36FA53	Croushore Farm	Carmichaels	X	X					
36FA191	Bradisch—3	Connellsville							
36FA205	Binotto—2	Dawson							
36FA210	Haas	Dawson							
36FA217	Stanish	Uniontown	XX	X					
36FA231	M. Speers	Fayette City							
36FA275	Harim #1	Uniontown							
36FA229	Blosser Mound	Morgantown N.				X			
		Totals: 9 sites	3	2	0	1	0	0	0

APPENDIX II—*Continued*

Forest County, Pennsylvania

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
36FO1	Siggins	West Hickory	X	X					
366FO2	Hunter Station	President	X	X					
36FO17	Schwab Run	West Hickory	X	X					
		Totals: 3 sites	3	3	0	0	0	0	0

Greene County, Pennsylvania

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
36GR4	Horn Farm	Mather							
36GR21	Fisher Site	Majorsville							
36GR66	The Whipkey Site	Carmichaels	X						
36GR71	Thomas No. 1	Carmichaels	X	X	X				
36GR102	Delphine Game Land	New Freeport							
36GR140	Hillman Coal & Coke	Rogersville	X						
36GR160	Throckmorton #1	Rogersville	X	X					
36GR171	Rosemont Cemetery	Rogersville			X				
36GR175	Tressel	Holbrook							
36GR63	Gensler	Waynesburg	X						
36GR36	Crow Mounds 1 & 2	Majorsville				X			
36GR49	Mackey Farm	New Freeport							
36GR73	Biel #2	Mather		X	X				
36GR76	Lost Leah	Carmichaels	X	X					
36GR179	Freeman	Wadestown, WV-PA							
36GR111	Hawkins #1	Ellsworth							
36GR116	Hillman Land Co.	Mather			X				
36GR126	Weaver	Mather							
36GR129	Neil Corner	Carmichaels							
36GR148	Whitlatch #3	Rogersville		X	X				
36GR160	Throckmorton #1	Rogersville		X	X				
C-36GR180	Mapleton Mound	Masontown				X			
36GR161	Throckmorton #2	Rogersville							
36GR175	Tressel Site	Holbrook							
36GR114	Heath Cliff (Crouse)	Waynesburg		X	X				
		Totals: 25 sites	6	7	6	2	0	0	0

Indiana County, Pennsylvania

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
36IN22	Wilbur Bell	Elderton	X	X					
36IN25	Wissinger Farm	Elderton	X	X					
36IN290	Flint Knob	Elderton	X	X					
36IN29	Hamil Farm	Ernest	X	X					
36IN283	Ken Adams #3	Ernest	X	X					
36IN37	Weaver	Valier	X						
36IN41	West Mahoning #3	Dayton		X					
36IN47	Stiteler #1	Plumville							
36IN291	Leisure Run	Plumville	X	X					
36IN111	Griffith Site	Indiana							
36IN113	W. A. George #1	Indiana	X						
36IN122	Ralph Brown	Indiana	X	X					
36IN133	Shopping Mart	Indiana	X						
36IN139	Delton Stiles	Indiana	X	X					
36IN161	Yellow Creek #1	Brush Valley	X	X					
36IN168	Yellow Creek #8	Brush Valley	X	X					
36IN194	Blacklick Church	Vintondale	X	X					
36IN216	Campbell #1	Bolivar							
36IN223	Penrose #2	Bolivar							
36IN287	Grafton #1	Bolivar							

APPENDIX II—*Continued*

Indiana County, Pennsylvania

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
36IN255	Mears #2	Clymer	X	X					
36IN260	Zubalik #2	Clymer	X	X					
36IN265	Martin	Clymer		X					
36IN274	Elkin #1	Clymer	X						
36IN277	Elkin #4	Clymer	XX	X					
36IN278	Greene #1	Clymer							
36IN279	Greene #2	Clymer	X						
36IN115	Overman	Clymer	X						
36IN319	Clawson	Blairsville	X	X					
		Totals: 29 sites	22	17	0	0	0	0	0

Jefferson County, Pennsylvania

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
36JE15	Jack Hall	Summerville							
36JE41	Montgomery Farm #3	Summerville							
36JE51	Shaffer Site	Summerville							
36JE85	Robert Johns	Summerville							
36JE21	Hamilton #3	Valier	X						
36JE34	Hamilton #2	Valier							
		Totals: 6 sites	1	0	0	0	0	0	0

Lawrence County, Pennsylvania

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
36LR3	Edinburg (Mound)	Edinburg	XX	X		X			
36LR11	Chambers (Mound)	Edinburg	X	X		X			
36LR76	Weinschenk's Island	Bessemer	X						
36LR98	Westminster College	New Castle N.							
36LR1	West Pittsburgh	New Castle		X					
36LR5	Morrow Place	New Castle	X	X		X			
36LR21	Bollinger Site	Edinburg	XX	X					
36LR10	Young Mound	New Castle N.				X			
36LR102	Ashton Cemetery	Edinburg	XX	X					
		Totals: 9 sites	6	6	0	4	0	0	0

McKean County, Pennsylvania

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
C-36MC14	Nelse Run Mound	Cornplanter Run				X			
		Totals: 1 site	0	0	0	1	0	0	0

Mercer County, Pennsylvania

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
36ME16	Stewart I	Sharpsville							
36ME51	Stewart Farm	Sharpsville							
36ME62	Seven Acres	Sharpsville							
36ME31	Hitchcock #11	Greenville							
36ME107	Spring	Mercer							
36ME108	Route 58	Mercer							
36ME114	Irish Town	Mercer	X	X					
36ME176	Arden Rice #1	Mercer	X						
36ME177	Arden Rice #2	Mercer	X	X					
36ME136	McDougal Farm #1	Grove City							
36ME58	Sandy Lake Mound	Sandy Lake				X			
		Totals: 11 sites	3	2	0	1	0	0	0

APPENDIX II—*Continued*

Somerset County, Pennsylvania

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
36SO15	Holfsopple	Hooversville	X	X					
36SO19	Dock	Friendsville							
36SO20	Big Crossing	Ohiopyle		X					
36SO108	Moser #3	Meyersdale							
36SO129	Groff #2	Confluence							
36SO160	Berkey #2	Somerset							
		Totals: 6 sites	1	2	0	0	0	0	0

Venango County, Pennsylvania

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
36VE4	West Sandy Site	Kennerdell		X					
36VE3	Eagle Rock Village	President		X					
36VE2	President Village	President		X					
36VE23	Venango Manor #3	Utica		X					
36VE50	Seneca Farm	Oil City	X	X					
36VE69	Oleopolis Village	President		X					
36VE124	Polk Farm	Polk	X	X					
36VE182	Burkhart Farm	Utica							
36VE156	Triple Oak	Kennerdell							
36VE12	Pithole Creek	Pleasantville	X	X					
36VE14	Seneca Run	Franklin	X	X					
36VE16	Martin-Harvey	Utica	X						
36VE25	Husk	Utica							
36VE28	Jackson's Eddy	Emlenton	X	X					
36VE11	Franklin Point	Franklin		X					X
		Totals: 15 sites	6	11	0	0	0	0	1

Warren County, Pennsylvania

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
36WA99	Buckaloons #10	Youngsville	XX	X					
36WA98	Buckaloons #9	Youngsville	XX	X		X			
36WA29	Irvine #3	Youngsville	X	X					
36WA31	Irvine #1	Youngsville	X	X					
36WA96	Buckaloons #6	Youngsville	X	X		X			
36WA97	Buckaloons #8	Youngsville	X	X					
36WA2	Sugar Run	Cornplanter	X	X		X			
36WA87	Harrington #2	Youngsville	XX	X		X			
36WA80	Ziegler	Tidioute							
36WA1	Williams Mound	Russell				X			
36WA15	Berkabile #1	Cornplanter Run	X	X					
36WA93	Buckaloons #1	Youngsville	X	X		X			
36WA95	Buckaloons #5	Youngsville	X	X		X			
36WA102	Buckaloons #13	Youngsville	X	X		X			
36WA24	Langler Mound	Cornplanter Run				X			
36WA133	Gravel Test Site	Cornplanter Run							
C-36WA226	Cornplanter Mound 4	Cornplanter Run				X			
C-36WA227	Cornplanter Mound 1	Cornplanter Run				X			
C-36WA228	Cornplanter Mound 2	Cornplanter Run				X			
C-36WA229	Cornplanter Mound 3	Cornplanter Run				X			
C-36WA230	Cornplanter Mound 5	Cornplanter Run				X			
C-36WA231	Kinzua Beach Mound	Cornplanter Bridge				X			
C-36WA232	Irvine Mound 5	Youngsville				X			
C-36WA233	Harrington Mound	Warren				X			
		Totals: 24 sites	12	12	0	17	0	0	0

APPENDIX II—*Continued*

Washington County, Pennsylvania

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
36WH714	Meadows Mound Village	Washington E.		X		X			
36WH606	Opossum Run	Hackett							
36WH29	Riverview Mound	Monongahela				X			
36WH31	Fisher, Courtney Mound	Monongahela				X			
36WH721	Pollock's Hill Mound	Monongahela				X			
36WH415	Avella Mound	Avella			X	X			
36WH297	Meadowcroft	Avella							
36WH687	Lowry #5	Midway							
36WH707	Salvini Site	Midway							
36WH121	Abrutz Mound	Midway				X			
C-36WH973	Carter #3	Midway	X	X					
C-36WH999	C. V. Cowden	Midway							
C-36WH122	Lutheran Mound	Midway				X			
36WH605	West Alexander	Claysville							
36WH106, 110	Mungai Farm	Midway	X	X					
C-36WH965	Robertson #1	Claysville	X	X					
36WH411	Plumbsock	Prosperity							
36WH703	Bentz Mound	Prosperity				X			
C-36WH929	Sandberg #2	Prosperity		X					
C-36WH978	Pleasant Grove	Prosperity							
36WH11	Smith Farm	Amity	X		X				
36WH14	Moore Farm	Amity	X	X					
36WH435	Winnett	Amity	X	X					
36WH594	J. B. Wilson	Amity							
36WH596	G. Earnest	Amity		X					
36WH742	Evert Bamberger	Amity	X	X	X				
36WH801	Abraham Phillips	Amity	X	X					
36WH804	Wilson Pizzi #2	Amity	X						
36WH616	Candor Mound	Clinton				X			
36WH40	Van Eman	Canonsburg		X					
36WH90	Log Cabin	Bridgeville	X						
36WH248	Hickman Barn	Bridgeville							
36WH477	Dunsfort	Bethany	X	X					
36WH725	Hunter Site	W. Middletown							
36WH974	Dunkle	W. Middletown							
36WH717	Hamilton Farm	Washington W.							
36WH727	Clarks Green Acres	Washington W.							
36WH732	Bartusiak	Washington W.							
36WH796	Curtis McGaughey #2	Washington W.	X		X				
36WH826	Alex Taggart	Washington W.	X						
36WH947	Munson	Washington W.	X						
C-36WH950	Lutz #3	Washington W.							
C-36WH975	Dixon	Washington W.	X	X					
36WH55	Tau Site	Washington W.							
36WH39	White Farm Mound	Washington W.				X			
36WH618	Bates #1	Washington W.							
36WH661	J. T. Hamilton	Washington W.							
36WH36	Linn Mound	Washington E.				X			
36WH37	Old Wylie Mound	Washington E.				X			
36WH456	Ballfield Site	Washington E.	X						
36WH632	Frank	Washington E.							
36WH640	Eighty Four	Washington E.							
36WH647	Clair	Washington E.	X						
36WH678	Hatfield	Washington E.	X	X					
36WH665	Mazur	Washington E.							
36WH675	Ashmore #2	Washington E.		X					
36WH873	Chaffon	Amity		X	X				

APPENDIX II—*Continued*

Washington County, Pennsylvania

Site Number	Site Name	7.5′ USGS Map	RN	TP	BP	M	GF	KN	MS
36WH58	Hackney	Amity	X	X					
36WH265	John O'Brien	Amity							
36WH670	Old Zollarsville	Ellsworth							
36WH782	Howard M. Keys	Ellsworth	X	X					
36WH786	Kiger #2	Ellsworth	X	X	X				
36WH787	Kiger Pond	Ellsworth	X	X					
36WH798	Weaver Miles	Ellsworth	X	X	X				
36WH809	Shidler #1	Ellsworth	X	X	X				
36WH813	Shidler Village	Ellsworth	X	X	X				
36WH824	Stopka #1	Ellsworth	X	X	X	X			
36WH875	Fava #1	Ellsworth		X					
36WH885	H. B. Keys #1	Ellsworth	X	X					
36WH437	John Krupzig	Ellsworth	X	X					
36WH443	Myles	Ellsworth			X				
36WH601	Greenlee Camp Site	Ellsworth							
36WH80	S. PA. Railroad	Canonsburg							
36WH81	Hahn's Bench	Canonsburg		X					
36WH82	Hahn's	Canonsburg		X					
36WH301	Wiley Farm	Washington E.	X			X			
36WH764	W. Dunn #34	Ellsworth			X				
36WH767	Fitzwater #28	Ellsworth			X				
36WH770	Gialata	Ellsworth			X				
36WH774	Jim Greenlee #3	Ellsworth							
36WH782	Howard M. Keys	Ellsworth	X	X	X				
36WH785	Kiger #1	Ellsworth	X	X	X				
36WH800	Pershina #2	Clinton							
36WH810	Shidler #2	Ellsworth	X	X	X				
36WH825	Stopka #2	Ellsworth	X	X	X				
36WH829	Ulery #4	Ellsworth	X		X				
36WH832	Wayne Weaver #1	Amity		X					
36WH833	Wayne Weaver #2	Amity							
36WH876	Fava #2	Ellsworth							
36WH877	Fava #3	Ellsworth							
36WH880	Gas Light Bottom	Ellsworth							
36WH925	Beatty	Prosperity							
C-36WH946	Patton #1	W. Middletown							
C-36WH973	Carter #3	Midway	X	X					
C-36WH1010	J. Gagich	Avella				X			
C-36WH1028	Crall Mound	Monongahela				X			
36WH10	Pollocks Knob	Glassport				X			
36WH703	Bentz Mound	Prosperity				X			
36WH781	Indian Ridge Cairns	Ellsworth				X			
36WH744	Bennett Chapt. 27 #1	Ellsworth			X				
C-36WH1044	Chaffon #2	Amity			X				
C-36WH1045	Chaffon #3	Amity			X				
36WH351	M. S. #41	W. Middletown		X	X				
36WH844	Mike Krajacic	W. Middletown		X	X				
36WH438	Bennington #1	Ellsworth		X	X				
36WH763	Rollo Dunn	Ellsworth		X	X				
36WH921	Cowden #2	Prosperity	XX		X				
36WH922	Robert Dunn	Prosperity			X				
36WH473	Krajacic Camp	W. Middletown	X		X				
36WH741	Bamberger #1	Amity	X	X	X				
36WH853	Taggert (Helsel #2)	Washington W.	X		X				
36WH662	Krajacic (Lowery)	W. Middletown	X		X				
36WH943	McGaughey #2	W. Middletown	X		X				
		Totals: 113 sites	41	40	32	19	0	0	0

APPENDIX II—*Continued*

Westmoreland County, Pennsylvania

Site Number	Site Name	7.5' USGS Map	RN	TP	BP	M	GF	KN	MS
36WM20	Summy	Mt. Pleasant		X					
36WM151	Thomas Hurst #3	Mt. Pleasant							
36WM522	Wilkinson	Mt. Pleasant	X						
36WM40	Herminie	Irwin	X	X					
36WM410	McGrew	Irwin		X					
36WM537	Blair Farm Mounds	Irwin				X			
36WM44	Hannas Run	Wilpen		X					
C-36WM666	Bear Cave Tower	Wilpen	X						
36WM50	Billy (Mound)	Donora				X			
36WM432	Caliagni #1	Donora							
36WM455	Backstrum #3	Donora							
C-36WM677	Billy #3	Donora							
36WM70	Shupe	Smithton	X	X					
36WM216	Rubright Farm Site	Murrysville							
36WM219	James Torrance #2	Murrysville							
36WM234	Speedway	Latrobe							
36WM237	Orgovan	Latrobe							
36WM264	Foul Air	Latrobe							
36WM299	Greenhouse #1	Latrobe							
C-36WM638	Clark	Latrobe	X						
36WM588	Stewart #2	Latrobe	X	X					
36WM245	Dillon	Mammoth							
C-36WM650	Conrath #1	Mammoth	X	X					
36WM249	Lenhart #1	Stahlstown	X						
36WM256	Scaife #4	Derry							
36WM477	Dividing Ridge	Derry							
36WM487	Bergman #4	Derry	X	X					
C-36WM622	Five Points Road #1	Derry	X						
36WM320	Frye	Blairsville							
36WM321	Keeno #2	Blairsville							
36WM359	Dumlap #4	Blairsville							
36WM523	Sulkosky #3	Blairsville	X						
36WM524	Miodufzeuski	Blairsville	X						
36WM287	Hillside #1	Derry	X	X					
36WM410	McGrew	Irwin							
36WM496	Andree #3	Avonmore							
36WM498	Andree #5	Avonmore	X	X					
36WM499	Andree #6	Avonmore	X	X					
36WM507	Lick Run	Rachelwood	X	X					
36WM573	Christopher #1	Saltsburg	X						
36WM580	Bortz #1	Saltsburg	X	X					
36WM596	Marcellus	Greensburg	X	X					
36WM30	Garvers Ferry	Freeport					X		
36WM140	Thomas Orr	Greensburg						X	X
36WM23	Ryan	Slickville						X	X
36WM39	Haymaker Run Mound	Murrysville				X			
36WM685	Shepler Mound	Donora				X			
		Totals: 47 sites	19	14	0	4	1	2	2